The Chemical Age

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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An Estimate of British Chemical Trade

THE detailed and comprehensive review of "British Chemical Trade in 1927" (Trade Information Bulletin No. 545, 10c.), prepared by Mr. Homer S. Fox, United States Trade Commissioner in London, and just issued by the United States Department of Commerce, is a document well worth the attention of British chemical manufacturers and merchants. The main facts are carefully set out, and the inferences drawn from them indicate an informed and balanced judgment. The conclusions in the report are well summarised in an introductory note by Mr. Julius Klein, the director of the Bureau of Foreign and Domestic Commerce. The main features of the year are a fairly satisfactory volume of business, with a moderate upward trend towards the close of the year; general steadiness in price levels, due largely to the extension of concerted action on the part of manufacturers and merchants, through conventions and sales agreements, especially in industrial chemicals; increased centralisation of manufacturing interests; the extension of production facilities in several important branches; and a marked growth in the attention given to research.

Mr. Klein, who is particularly interested in the development of American export trade, points out that with the centralisation of the British industry there has arisen considerable discussion as to the participation of British producers in the international chemical cartel. In addition to actual financial mergers, the year has been marked by a very strong movement towards the formation of conventions, agreements, syndicates, or rings to control production, to allocate markets, and to determine common sales prices—or a combination of these activities—in respect to individual commodities. The more uniform selling methods introduced recently, and especially during the past year, are stated to be proving satisfactory to both buyers and sellers, and the movement seems likely to expand. It is also noted by Mr. Klein that progress in research, standardisation, and simplification has been marked during the past year, and that steps have been taken to protect industry in various ways. British production, he points out, has more than doubled in the last 20 years, so that to-day it is about one-third that of the German chemical industry and one-eighth that of the United States. As the third largest world-producer of chemicals, Great Britain is logically the third largest exporter of these products and has attained a volume in foreign markets equivalent to 50 per cent. of that of Germany and 70 per cent. that of the United States. A growth of 37½ per cent. in Empire exports in the past five years is recorded as the outstanding feature of British trade in chemicals, and sales to Empire countries now represent half the total British export trade in chemical products. Without this expansion in Empire trade British chemical exports, it is estimated, would be only four-fifths those of 1922.

In view of the fact that Great Britain is the largest market of the United States for chemicals, consuming about 8 per cent. of American exports, and, further, that Great Britain is one of the five largest suppliers to American requirements for these products, the exposition of developments in the British industry given in the present report is commended to the notice of the American manufacturer and exporter of chemicals.

One of the most interesting chapters in Mr. Fox's review of chemical trade developments is that which deals with new chemical products. These developments have taken place mainly in the fields of dyestuffs, fertilisers, pharmaceutical chemicals, and organic solvents. They are described as in part original developments, and in part as representing new production in Great Britain of commodities already produced in other countries. Although the range of original chemical inventions in Great Britain is not so wide as in Germany, increasing attention is being given to chemical research and investigation, and the results are regarded as giving satisfaction to those primarily concerned.

"It is pointed out," Mr. Fox writes, "that Great Britain has long been predominant in the heavy

industries, such as coal, iron and steel, engineering and shipbuilding, and in the chemical field in such heavy chemicals as alkalis and crude coal-tar products. Chemical research and invention on a broad scale have been subordinated to developments on the mechanical side of industry. Now that the rapidly growing importance of the chemical industry is more widely recognised in Great Britain, it is confidently anticipated that progress will be comparable with that which for so many years has characterised the British heavy industries and which has given the country world leadership in that field."

The great chemical organisation at Billingham is frequently referred to in the course of the report, and it is stated that a new unit shortly to be in operation will include a plant for the production of synthetic methanol from water gas; it is expected that the methanol plant will be brought into production sometime during the present year. Considerable development, it is pointed out, has taken place in the British production of organic solvents, and the manufacture of additional products, including butyl alcohol, has been started. The consumption of cellulose lacquers, primarily in the finishing of motor cars, has progressed rapidly, and the majority of the motor cars now on the market are put out with this type of finish. Considerable expansion in this field is expected during the coming year—in the production of the basic materials as well as in the manufacture of finished products. The commercial manufacture of ethylene glycol and its derivatives has been under consideration, but no announcement has yet been made regarding definite production.

To Canada and the United States

THE success of the combined tour in August-September to Canada and the United States, which is being organised by the Society of Chemical Industry and the Institution of Chemical Engineers, seems already assured. The members of both bodies who have provisionally announced their intention of joining the party number nearly a hundred, and it is understood that some of the larger chemical firms are making liberal grants towards the expenses of those of their technical staffs who desire to join. The presence in London during the past week of Mr. H. C. Parmelee, secretary of the American Institute of Chemical Engineers, who are responsible for the arrangements for the fortnight's tour (or land cruise, as it is called in the American language) from Quebec to New York, has permitted a personal exchange of views as to the programme. The result is regarded as entirely satisfactory. The societies concerned have wisely decided to leave the actual arrangements in the competent hands of the Raymond and Whitcomb Co., who have had large experience in handling such matters, and who, like the White Star Line itself, seem anxious to secure the fullest possible comfort for the party. The British visit appears to be looked forward to with great interest both by the Institute of Chemical Engineers, who are organising the first fortnight's tour, and by the American Section of the Society of Chemical Industry, who are responsible for the final week's arrangements in New York.

As to the details of the tour, the party are due to leave Southampton in the White Star liner *Megantic* on Saturday, August 11, and to arrive at Quebec on Sunday, August 19. There they will be welcomed by the American Institute of Chemical Engineers. The land cruise by rail will include visits to Shawinigan Falls, Montreal, Kirkland Lake, Port Colborne, Niagara Falls (where a stay of three days will be made), Akron, Pittsburgh, Wilmington, and Washington (where three days will be spent). On their arrival in New York on the evening of Sunday, September 2, the party will be the guests of the American Section. Tuesday and Thursday will be largely occupied with the annual meeting of the Society, and the rest of the time will be spent in various excursions and visits to works. The party will leave New York on the White Star liner *Celtic*, on Saturday, September 8. So far as one can foresee, the arrangements are admirable, and the tour promises to be thoroughly pleasant and successful.

Can Chemists be Trade Unionists?

THE problem discussed by the London Section of the British Association of Chemists last week—whether the association should remain a registered trade union or not—is one that other bodies of professional workers have had to face and decide. The points on both sides of the question are generally much the same. There is the feeling, for example, that intellectual workers should insist on a professional status and have a professional organisation, and that for a professional class to classify themselves as trade unionists involves a certain loss of dignity. A common retort to this is that such an attitude has an element of snobbery. In addition there is what was frankly described as the "prejudice" against trade unionism, which still exists, although the larger industrial organisations have long recognised the advantages of collective bargaining between authorised bodies of representatives. On the other side there is the frankly trade union attitude, which regards the improvement of material conditions as the surest way of safeguarding the dignity of a profession and argues that concentration on this definite end is the most practical policy. In the discussion both points of view were represented, and finally it was decided to urge the council to give the matter full consideration and to consider the advisability of a change if the association's aims and objects could be secured otherwise than by registration as a trade union.

The Calendar

May 14	Society of Chemical Industry: "The Fuel Industries and the Work of the Chemical Engineer." Sir Arthur Duckham. "Water Purification." Sir Alexander Houston. Dinner at the Connaught Rooms. 7 p.m.	Institution of Civil Engineers, London.
15	Society of Chemical Industry: Addresses by Sir Alfred Mond and Sir John Russell.	—
15	Society of Chemical Industry: "Scientific Research as applied to Industry." Sir Alfred Mond. "The Part Played by British Workers in the Application of Fixed Nitrogen to the Soil." Sir John Russell. 10.30 a.m. "Developments in the Heavy Chemical Industry." Lt.-Col. G. P. Pollitt. 2.30 p.m.	—

"C.A." Photograph

A Chemical Industry Group

A Photograph taken at Whitehall Court on Friday, May 4, of a party of guests present at a luncheon given by Mr. Francis H. Carr, President of the Society of Chemical Industry, to Mr. H. C. Parmelee, Secretary of the American Institute of Chemical Engineers, and Editor of "Chemical and Metallurgical Engineering," New York. The figures (left to right) are:—Standing: Dr. J. P. Longstaff (Secretary of the Society), Mr. W. J. U. Woolcock, Dr. Stephen Miall, and Mr. Julian L. Baker. Seated: Mr. F. E. Hamer, Mr. C. A. Hill (Chairman of the Association of British Chemical Manufacturers), Mr. H. C. Parmelee, Mr. F. H. Carr, and Dr. E. W. Smith (Treasurer of the Society).

New Types of Colloid Mills

Important Modifications to Reduce Power Used

At the Oderberg Chemische Werke Aktiengesellshaft, in Czechoslovakia, a good deal of work has been done on an installation of Plauson colloid mills with a view to a reduction in the amount of power used without loss of efficiency. The results, which appear to be of considerable importance, are described by Mr. Otto Auspitzer in an article in "Industrial and Engineering Chemistry," which is reproduced below. There is also given a note on a novel two-rotor horizontal colloid mill.

THE use of colloid mills for dispersing solid substances in liquid media or two immiscible liquids in each other has been known for several years. The Plauson mill in particular has found widespread application in Europe. When Plauson gave publicity to it, great importance was predicted for the invention.

In the course of the last six years a series of colloid mills was constructed on the fundamental Plauson principles and appreciable improvements were introduced. The Oderberg Chemische Werke Aktiengesellshaft, at Neu Oderberg, Czechoslovakia, who were using a series of Plauson mills in their operations, ascertained, through observation of the corrosion occurring on the mill housing, that a large part of the applied power was not available for the actual work of dispersion, but was dissipated through the friction between the material to be ground and the sides of the housing. A method of reducing this friction to as small an amount as possible was then sought.

Description and Operation

After repeatedly futile experiments a successful method of construction was devised. This is schematically represented in Fig. 1. In the Oderberg design the material to be milled

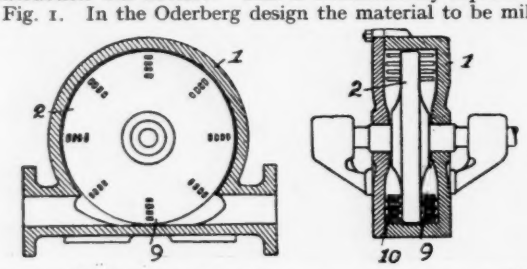


FIG. 1.—CONSTRUCTIONAL DIAGRAM OF ODERBERG MILL. 1, HOUSING; 2, ROTOR; 9, BEATERS; 10, BAFFLES OR ANVILS.

is conducted tangentially past the beaters. The mill chamber, with the exception of the beating point, is empty, so that, in contradistinction to other types of colloid mills, there is no rotation of the material within the housing. Fig. 2 shows the course of the material to be processed. This is pre-mixed in the tank, 6, which should be equipped with a stirrer. Depending on the size of this mixing tank (in a mill already set up the capacity was raised to 12,000 litres), an almost continuous

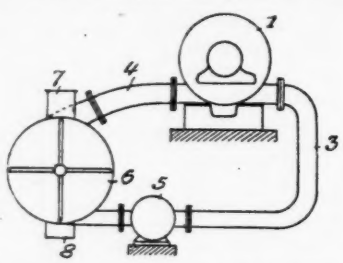


FIG. 2. DIAGRAM OF COMPLETE INSTALLATION.

mode of operation can be attained. Where a perfectly continuous process is necessary, the connection of several mills in series is recommended. The pre-mixed material is conducted into the mill, 1, through the pump, 5, passing from there at very low velocity between the rapidly rotating beating apparatus and the baffles or anvils (9, 10, Fig. 1); it then returns to the mixing tank through the connection 4. The design of this connection has been proved to be of primary importance in relation to the power consumption. If the connection is perfectly horizontal the power consumption rises, because the friction from the interior of the housing is transferred to the upper wall of the connection; but if the connection is so designed that it encloses the path in which the material would escape into the open if no pipe were present, the power consumption drops appreciably. Careful parallel experiments have (it is claimed) demonstrated that the colloid mill on the Oderberg system, with equal performance, requires only about one-seventh of the power necessary in the case of the Plauson mill; in other words, in a colloid mill in which the material to be beaten is carried along the sides of the housing, six-sevenths of the applied power is spent in internal friction.

The new mill has still another advantage. In a Plauson mill, in spite of the eccentric arrangement of the shaft, the material being processed goes through a rotary motion, the more rapid the higher the rate of revolution of the rotor. Hence only the difference between the beater velocity and the velocity of the material is effective for the actual work of beating. In the Oderberg system the material passes through the mill so slowly that the full rotation velocity of the beater arms can be made available.

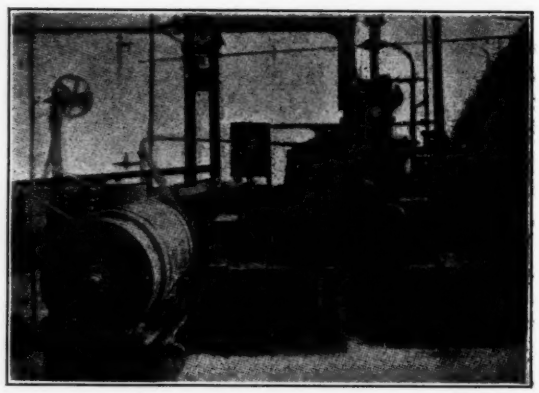


FIG. 3. COMPLETE INSTALLATION OF COLLOID MILL.

Fig. 3 shows a completed installation in which it was important that the beating be carried out at as low a temperature as possible; hence the mixing tank, as well as portions of the pipe conveyers, is provided with water cooling. Cooling of the mill itself is unnecessary, since the material to be disintegrated remains in the mill for an extremely short time, and then beaters and anvils are cooled by the continuously flowing material itself. The beating effect is dependent on both the

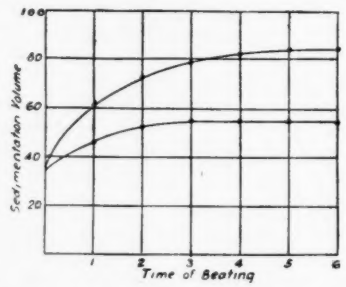


FIG. 4. EFFECTS OF DURATION AND RATE OF BEATING UPON A PROCESSED MATERIAL.

rate of rotation and the duration of beating. Fig. 4 shows the influence of these factors upon the sedimentation volume of a processed material of very high specific gravity and 50 per cent. dry content, after standing 24 hours.

Applications

The field of application of the new colloid mill is extraordinarily widened because of its low power consumption. In the first place, solids can be disintegrated to a very much higher degree than could be accomplished hitherto. In many cases, the beating effect is manifested in a striking rise in the loose volume (Schüttvolumen). Fig. 5 shows samples of

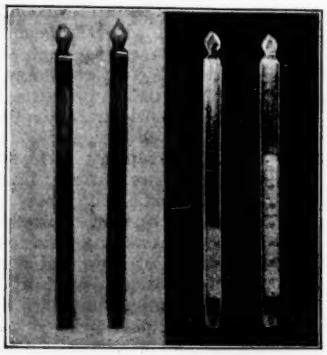


FIG. 5.—INCREASE OF LOOSE VOLUME ON PROCESSING IN COLLOID MILL. FIRST TUBE, MINIUM GROUND IN BALL MILL; SECOND, IN COLLOID MILL; THIRD, KAOLIN IN BALL MILL; FOURTH, IN COLLOID MILL.

minium and kaolin, tubes 1 and 2 containing each the same weight of minium, and tubes 3 and 4 the same weight of kaolin. Samples 1 and 3 were first ground dry in a ball mill as long as disintegration that could be followed microscopically took place; samples 2 and 4 show the materials after beating in the colloid mill. In the case of minium, the covering power increased proportionately with the loose volume; while 179 grams of the material ground in the ball mill were required to cover evenly a square meter of smooth sheet iron, only 76 grams of the minium beaten in the colloid mill were needed. Through processing in the colloid mill, kaolin acquires properties completely lacking in the ordinary material. Thus, Ditmar has cited the high adsorptive power of such a kaolin, making it possible to utilise such highly dispersed material in place of ycopodium for dusting purposes in the rubber industry.

RAW SULPHUR. SULPHUR AFTER DISPERSION.

FIG. 6.—SULPHUR DISPERSION PRODUCED IN COLLOID MILL COMPARED WITH RAW SULPHUR USED.

1125 ×

A further application of this mill is in the production of colloidal solutions through mechanical dispersion. Plauson originally had this in view, but it could be accomplished only incompletely with his apparatus. Fig. 6 shows photomicrographs of a sulphur dispersion produced in an Oderberg colloid mill, compared with the raw sulphur used. Such a preparation for combating plant pests is already on the market under the name "Sulikoll." The new mill is also being used for the production of arsenate solutions, colloidal graphite, and for many similar purposes.

There are numerous cases where a material can be dispersed almost to the degree of true colloidal solution through use of the colloid mill. By varying the duration of beating and the rapidity of rotation it is possible extensively to influence the degree of dispersion. In this connection it was observed that with many materials a minimum velocity of rotation, designated as "critical speed of rotation," is advantageous for attaining a certain beating effect. In the experimental investigation of the most favourable conditions of beating for a large number of materials it was found out at Oderberg that occasionally a speed of rotation of 6,000 r.p.m. for one hour is more effective, and involves a lower total power consumption, than many hours' beating at 3,000 r.p.m. To reach speeds unattainable by direct coupling to electric motors the use of toothed belt gearing has proved advantageous; likewise, where the exhaust steam can be utilised, direct coupling of the mills to small high-speed steam turbines can be employed. In general, the upper limit of speed is approximately 9,000 r.p.m.; a velocity of 12,000 r.p.m., tested experimentally, proved in most cases no longer economical.

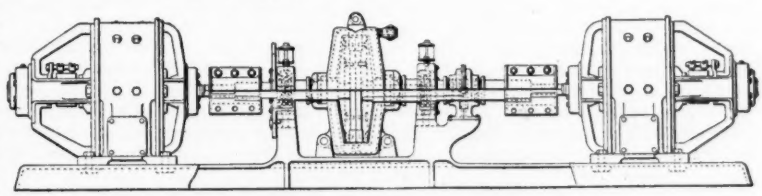
Where the highest degree of dispersion is desired it is generally expedient to combine the mechanical action of the colloid mill with chemical influence on the beating process. Peptisers and protective colloids, chosen according to the nature of the material, favour the milling process, without, however, completely eliminating the need of a definite minimum speed of rotation.

A Two-Rotor Horizontal Mill

A new type of colloid mill has been placed on the market by the U. S. Colloid Mill Corporation, East Avenue and 13th St., Long Island City, N.Y. The mill, as shown in the accompanying illustration, consists of two adjacent, oppositely driven rotors mounted within a casing. The casing is cored to serve as a water jacket and is split for easy removal when cleaning is required. The rotors are mounted on shafts running on double rows of ball bearings, directly connected through rigid couplings each to an electric motor. The right-hand shaft is hollow for half of its length and serves as one of the fluid passages. Fluid connections are made to the rotor chamber and to a collector on the shaft, shown between the right-hand ball race and the coupling.

This is claimed to be the only double rotor machine on the market. The advantage claimed for the arrangement is that the effective speed of the pair of rotors is twice that of either one alone, and can be twice that mechanically possible for a single rotor. The result is said to be a reduction in shaft stresses and in wear and maintenance, and an increase in the productive capacity of the mill. The clearance between the rotors is adjustable by means of an outside micrometer screw. Material may be passed through the rotors in either direction, that is, through the shaft and out between the rotors, or vice versa. As a result of the two rotors moving in opposite directions at the same speed, there is said to be no pumping action of the mill even when the flow of fluid is from inside to out. It is necessary to force the fluid through the mill with an external pump under all circumstances. The advantage claimed for this is that material may be held in the mill as long as necessary to obtain complete homogenisation or disintegration and dispersion, without the necessity for using a battery of mills or making several passes through the same mill.

The rotors in the standard machine are 13 in. in diameter and consist of hardened and interchangeable steel rings mounted on discs at their peripheries. The width of the ring surface is regulated by the type of material being processed. Rings are supplied plain for use in making emulsions, or dentated or serrated around the inner periphery for use in grinding and dispersing fibrous material. The standard mill is said to have a capacity ranging from 500 to 1,000 gallons per hour depending upon the viscosity of the material being processed. Special linings such as Monel metal or chrome or nickel plate may be supplied if desired.



THE TWO-ROTOR HORIZONTAL COLLOID MILL.

An American Editor's Visit

Prospects of the Canadian Tour

MR. H. C. PARMELEE, secretary of the American Institute of Chemical Engineers, and editor of *Chemical and Metallurgical Engineering*, New York, left England, with Mrs. Parmelee, by aeroplane on Wednesday morning for the Continent. Arriving on April 14, at Liverpool, Mr. Parmelee spent a fortnight in the north of England, visiting various centres of chemical industry. On April 28 he reached London, and spent a busy ten days in visiting works and attending various functions. On Friday, May 4, after visiting the works of British Drug Houses, Mr. F. H. Carr, President of the Society of Chemical Industry, entertained him to lunch at Whitehall Court, together with a party of guests. The latter (of whom a photograph appears on p. 429), included, in addition to Mr. Carr and Mr. Parmelee, Mr. C. A. Hill, Chairman of the Association of British Chemical Manufacturers, Mr. W. J. U. Woolcock, Mr. Julian L. Baker, Dr. Stephen Miall, Dr. E. W. Smith, Dr. Longstaff, and Mr. F. E. Hamer.

C. A. Photograph

MR. AND MRS. PARMELEE VIEW LONDON FROM THE ROOF OF BOUVERIE HOUSE.

An Evening with the Chemical Engineers

On Friday evening Mr. Parmelee was the guest of the British Chemical Engineers at a dinner at the Criterion. Sir Alexander Gibb, president of the Institution of Chemical Engineers, occupied the chair, and the company included the following :—

F. Baker, W. A. S. Calder, L. Chew, M. D. Curwen, T. C. Finlayson, C. P. Finn, G. W. Fowle, C. S. Garland, Major V. F. Gloag, C. J. Goodwin, F. A. Greene, T. C. N. Haldane, F. E. Hamer, W. H. Hatfield, B. Heastie, G. A. Hebden, Professor J. W. Hinchley, R. Lessing, C. J. T. Mackie, P. Parrish, J. Arthur Reavell, N. Swindin, H. Talbot, A. J V. Underwood, S. G. M. Ure, F. A. Wilcox, and W. J. U. Woolcock.

There were no formal speeches, but during an interval the Chairman said that, although there were no toasts in the ordinary sense, it would be an oversight not to drink the health of Mr. Parmelee, whom they were all very glad to see over in this country, and of whom they hoped to see more in America in the near future. They were all grateful to Mr. Parmelee for his help in dealing with the many engineering problems of the industry, for the great trouble he had taken in organising the arrangements for the forthcoming tour through Canada and the United States, and for giving them an opportunity of personally meeting him before they saw him in America. He was almost as well known in this country as in America, and he was sure they all wished to show their goodwill to him by drinking his health. (Applause.)

Chemical Engineering Progress

Mr. Parmelee, in replying, said he regarded the compliment they had paid him as one also addressed to the American Chemical Engineers whom he represented. He had had an extraordinarily fine time since his arrival in England, and had already seen a great deal that interested him. On their side, they were looking forward with the keenest interest to the British invasion in August and September, and although they were a little nervous at times about doing justice to so large a party, he felt quite justified in promising their British visitors a good time. The American Institute of Chemical Engineers was prospering, and the science of chemical engineering was going ahead very rapidly. The relations were quite harmonious between the institutions, universities, and chemical industries, and the chemical engineers were finding a satisfactory objective in industry. In the opinion of some, their chemical engineering course of education was better organised to produce a definite product, fitted and equipped for a definite purpose, than almost any other branch of engineering. Some of the American branches of engineering had fallen rather into stodgy ways, and chemical engineering being a new science, they had set up a definite policy of grounding men in the fundamental principles on which the industry depended, and it was interesting to know that there was a good demand for that type of man. (Hear, hear.) Chemical engineering might now safely be said to have arrived, and the most cordial relations existed between industry and education. For some years they had had a joint committee, partly representative of industry and partly representative of the universities and colleges, and at present he had the honour of sitting as an impartial chairman who knew nothing about either, but had to keep both sides good-tempered. The chemical engineers of America had every reason to be satisfied with the results of their work, and it was a great pleasure to him to see chemical engineering in this country making such rapid progress on sound lines. (Applause.)

Speaking of the proposed tour to Canada and the United States in August, Mr. Parmelee stated that the Raymond and Whitcomb Co., who had charge of the arrangements, were doing everything possible to ensure the comfort of the party. An interesting land cruise had been planned, which would give visitors an idea of the country and an insight into various industries likely to appeal to them, and though there would be one or two meetings, there were to be no long speeches and long conference programmes. The intention was to make the tour both interesting and educational, and the American chemical engineers hoped that their arrangements would achieve both purposes. (Applause.)

The proceedings closed with a vote of thanks to the chairman, proposed by Mr. Calder, and the singing of "Auld Lang Syne."

A Parting Message

To the Editor of THE CHEMICAL AGE.

SIR,—During the past three weeks I have had the pleasure of visiting a number of the chemical industries of England and Scotland, as well as consulting with some leaders of British industry, chemists and chemical engineers. The uniform courtesy with which I have been received and the privileges that have been extended have placed me under obligations that I am glad to acknowledge as a representative of the technical press of America. It is becoming increasingly popular for American technical editors to visit England for the purpose of observing the latest developments in technology, and English editors are finding it profitable as well as agreeable to visit American industries. The interchange of views and information resulting from these visits seems likely to serve a mutually useful purpose in broadening our knowledge and contributing to industrial progress.

It has been a pleasure to observe the extent to which British chemical industry is building on the sure foundations of research and development, and the reliance that is placed on science and engineering. It is also encouraging to note the efforts that are being made in the field of education to meet the demands of industry for chemists and chemical engineers. If these fundamental factors for technical success are combined

with business acumen and financial support, as they seem to be, the British chemical industry must grow and prosper.

By the invitation of the American Institute of Chemical Engineers to the Institution of Chemical Engineers and the Society of Chemical Industry, British members of these organisations will visit Canada and the United States in August and September. The second Coal Conference at the Carnegie Institute of Technology, Pittsburgh, in November, will also bring a number of British technologists to America. This friendly British invasion will make 1928 a year to be remembered by Americans and, it is hoped, by the British as well.—Yours, etc.,

London, May 8, 1928. H. C. PARMELEE.

The Tour in Canada and the U.S.

The map below shows the itinerary arranged for the tour through Canada and the United States. In connection with this, a questionnaire was issued this week by the Society of Chemical Industry to all members, and this when completed was to be returned to the Raymond and Whitcomb Co., 20, Cockspur Street, London, who are taking charge of the details.

ROUTE OF THE TOUR FROM QUEBEC TO NEW YORK

A similar document was enclosed to be filled up and forwarded to the Secretary of the American Section in New York. The secretaries of the two British organisations concerned report a satisfactory response from their members, and the tour promises to be much the largest and most successful overseas chemical tour ever organised in this country.

Appointments Vacant

HEAD of Department dealing with problems arising out of the use of artificial silk in conjunction with cotton, in the British Cotton Industry Research Association. Among the requirements is a knowledge of organic chemistry, and particularly the application of the methods of physical chemistry and chemical engineering thereto.—Also assistants in the department.—Dr. R. H. Pickard, F.R.S., Director of Research, Shirley Institute, Didsbury.

WHEAT Chemist, for the Wheat Research Institute, New Zealand.—The High Commissioner for New Zealand, 415, Strand, London, W.C.2. June 30.

METALLURGIST, with special knowledge of alloy steels, for the Research and Development Department of the Mond Nickel Co.—Also a Technical Assistant to Chief of Department in London.—The Secretary, Research and Development Department, The Mond Nickel Co., Ltd., Victoria Station House, Victoria Street, London, S.W.1.

International Nitrogen Conference

First Report of Proceedings

THE second international nitrogen conference began on board the steamer *Lützow* in the Adriatic on May 1, under the presidency of Sir D. Milne-Watson. The first paper, read by Dr. Bueb, was entitled "Nitrogen Economics, Retrospect and Prospect." Dr. Bueb reported on the introduction of the new fertilisers, lime-saltpetre and Nitrophoska, which the German chemical industry has introduced to agriculture, and stated that the yield of crops obtained by the application of both was very satisfactory: the inquiry for Nitrophoska was, for the time being, greater than the output. He then dealt with the connection between nitrogen prices, the price of agricultural products, and nitrogen sales. The profit returned on the application of nitrogen had notably risen as a result of the course of prices since 1913-14. World-consumption had hitherto kept pace with the rising world-production of nitrogen compounds. The significance of the industry of synthetic nitrogen compounds for the provision of the world with food was discussed, as well as the future development of nitrogen production and sales. At the end of his paper, Dr. Bueb drew attention to the economic task of the nitrogen industry, emphasising also the tasks which must be fulfilled by the Governments of all countries in the interests of agriculture. He indicated the task of the industry as the supply of its products to agriculture as cheaply as possible, and the tasks of the Governments as the provision of lower freights for nitrogenous fertilisers, the abolition of all duties on them, and the support of credit institutes, which would provide agriculture with cheap money for the purchase of nitrogenous fertilisers until the sale of the crops.

Sir Alfred Mond's Remarks

The discussion of Dr. Bueb's paper was opened by Sir Alfred Mond, who congratulated the author of the paper on his excellent address. The development of the industry of synthetic nitrogen compounds was due, he said, to the genius of Haber and Bosch. The industry had made it possible to safeguard the production of food for the world. It had contributed to a universal rise in the standard of living, whereby serious social difficulties were avoided.

Dr. A. Aubert (Norway), and M. Henry Gall (France) also contributed to the discussion, expressing agreement with the views of Dr. Bueb.

Some Problems

The second paper was that of Mr. F. C. O. Speyer, general manager of Nitram, Ltd., and was entitled "Some Nitrogen Problems." He said that Synthetic Ammonia and Nitrates, the synthetic nitrogen compounds branch of Imperial Chemical Industries, was now producing fertilisers equivalent to 60,000 tons of pure nitrogen a year, and mentioned the favourable results of experiments with nitro-chalk. He then proceeded to deal with the future development of the nitrogen market. When the major part of projected plants in various countries had been erected, there would be, in the course of the next three years, on the basis of the present consumption, an excess of about 2½ million tons of pure nitrogen. Although agriculture could use this excess, the resulting increase in food production would far exceed the prospective increased demand at the present rate of growth of population. An attempt to bring nitrogen production to such a pitch in such a short time would lead to economic difficulties. In the distant future the world's need of nitrogen would certainly be very great, but the future expansion of the industry must fit itself to the requirements of agriculture.

Mr. Speyer then passed to the consideration of the maintenance of fertility by means of artificial fertilisers. He touched on their beneficial effects, and showed that it was important and desirable to maintain equilibrium between plant nutrients. Fundamental scientific investigation must constantly be maintained. The British producers of synthetic nitrogen compounds were aware that easy production of a fertiliser was no index to its utility in agriculture. The speaker emphasised the considerable economic importance to Great Britain of the system of intensive grassland management.

An account of the rest of the proceedings of the conference will appear in a future issue of THE CHEMICAL AGE.

British Association of Chemists

Annual Meeting of London Section

THE annual meeting of the London Section of the British Association of Chemists discussed interesting questions in connection with the Association's policy on Friday, May 4. Miss Wright (chairman of the Section) presided, and Professor G. T. Morgan (the president) was among those present.

Registration and Unemployment

Professor Morgan, in opening the discussion upon registration, alluded to the fact that the professions in general, and the Association by means of its Unemployment Benefit Fund n particular, had done all that was possible to shoulder their own responsibilities in the matter of unemployment without calling for any State assistance. They had thus done their part in keeping down the heavy expenditure necessarily involved in unemployment relief. He could not but feel that registration would do something to regulate the supply of chemists, and help to adjust the important problem of supply and demand. Over-production of chemists or anything else, was an evil, which a close profession would do something to remedy. It would not do, however, to minimize the difficulty of the problem of regulating supply and demand.

In regard to the legislation which would be necessary to make registration a finally accomplished fact, he would say at once that a united front would have to be presented to Parliament. It would be worse than useless for the Association alone, or for that matter any other society, to approach the Government unsupported on so important a question, and he looked forward to the time when a closer co-operation and understanding between all the societies interested would make this possible (applause).

Miss Wright, in expressing her appreciation of the President's remarks, said it was her opinion that interest in the subject was increasing. Mr. E. R. Bolton, the retiring President of the Society of Public Analysts, had alluded to the necessity of registration in his address. She believed that this was the first occasion when so direct an allusion had been made to the matter by that society.

Mr. Macdonald alluded to the question of title. He felt that this presented a serious difficulty, and in his view it would be necessary to seek an alternative to the title "chemist."

Trade Union or Not?

Mr. H. M. Morgan said that he was unable to discover any advantage in the Association's registration as a trade union. He had nothing to say against the legitimate activities of the trade unions, but his own firm did not employ trade union labour. He was required, however, sometimes to supervise the work of trade unionists to whose methods, even if he wished to, he could not object, since he himself was a trade unionist—the only one his firm employed (laughter). He was personally of opinion that incorporation as a company would serve the association's interests equally well in every way, and that prejudice in some quarters would be removed.

In reply, Mr. F. B. Gatehouse stated that one of the difficulties which faced the chemical profession was lack of unity. Whatever disadvantages the illegitimate use of trade union methods might possess, organisation on those lines at least taught the lesson of unity. It was a mistake to suppose that there was prejudice against trade unionism. The unions had learnt their lesson, and all up-to-date employers recognised their uses, and preferred to negotiate with them. He personally regretted that the Association, instead of concentrating upon the economic advancement of its members, had extended and thus diluted its activities. He felt that, far from dropping the registration, there ought to be more of the legitimate spirit as well as the letter of trade unionism within the council and the membership.

Prejudice against Trade Unionism

Mr. Rhodes (the general secretary), put before the meeting the practical aspect of the position. He was of opinion that there was nothing which could not be done under incorporation which was now being done under trade union constitution. He believed that among more influential members of the profession there was a certain prejudice, not against trade unionism itself, but against its application to professional societies. The British Medical Association was not a registered trade union. The Association of Scientific Workers had discontinued its registration, as had the Society of Technical Engineers. On the other hand, it was well understood that the Association, not being affiliated to the Trade Union Congress, was in a different category. Registration as a trade union also facilitated negotiations with some Government departments, notably the Ministry of Labour. If he had any preference, it was in the direction of cancellation of the trade union registration, but before so important a step was taken, very careful consideration would have to be given to every aspect of the question.

Mr. A. J. C. Cosbie was in favour of cancellation. It was his opinion that widespread prejudice existed in regard to the present constitution.

Mr. Macdonald concurred. In his view the negotiations of the chemist were actually adversely affected when a trade union represented him.

As a result of the discussion a resolution was passed by a large majority urging the council to give the matter very full consideration, and to consider the advisability of the change, if all the Association's aims and objects could be incorporated in the new constitution. There was only one dissentient, while six abstained from voting.

Unemployment Benefit Fund

Mr. J. B. P. Harrison (chairman of the Unemployment Special Purposes Committee), gave an interesting resumé of the work of the Unemployment Benefit Fund. He pointed out emphatically that no element of charity entered into the scheme, which differed entirely from a benevolent fund. The members subscribed while employed, and in consequence received the benefit of insurance when unemployed. No other society of chemists had ever succeeded in organising anything of the kind.

Continuous Coal Carbonisation, Ltd.

Chairman's Statement at General Meeting

PRESIDING at an extraordinary general meeting of Continuous Coal Carbonisation, Ltd., held at Winchester House, London, on Friday, May 4, Mr. George Marsden (chairman), in moving the adoption of the resolutions for dividing the £1 shares into 5s. shares and for adjusting the voting rights of the holders of the "A" and "B" shares, indicated briefly the features of their process which, he believed, constituted an enormous stride in the history of low-temperature carbonisation. Their system was first and foremost a continuous process by which coal, in a single operation and without any intervening manual labour, could be converted from small fine or slack coal into a uniform hard smokeless briquette which contained about 40 per cent. more carbon than average coal of equal weight. The same fuel was available in a pulverised form for industrial purposes, and, apart from its calorific value, was free from the risk of explosion when in contact with air.

Capital and operating costs were much smaller than those of any other system in use. Further, since the containers were continuously moving in and out of zones of radiant heat, being free from contact with flame, it was obvious that their containers must have a longer life than that of the ordinary built-in retort, while the regularity with which the heat was controlled secured a uniformity of production which existing intermittent systems found it difficult to achieve. For the last month the directors had been in contact with the heads and responsible representatives of collieries, electricity works, railways, cement works, marine engineers, and other large industrial coal consumers, and, of course, members of the ordinary public, who they hoped would be the largest consumers of all. The result of these negotiations led the directors to believe that they could reckon on an almost unlimited demand for their various products once they had become known.

Works at Erith

They had acquired on the Thames at Erith a site admirable both from a manufacturing and distributing point of view, and were about to install their first unit carbonising some 50 to 60 tons of coal a day. They intended as soon as possible to increase the number of units to a capacity of 1,000 tons a day. They were advised by the constructing company that the plant was now ready for delivery, and it was hoped it would be in operation during the next eight or ten weeks.

The resolutions were unanimously approved.

Public Analysts' Meeting

Abstracts of Papers

An ordinary meeting of the Society of Public Analysts was held in the Chemical Society's Rooms, Burlington House London, on Wednesday, May 2, the president, Mr. Edward Hinks, being in the chair. Certificates were read for the first time in favour of B. P. Bhargava, B.Sc., C. E. Gill, and T. P. Hilditch, D.Sc., F.I.C. Certificates were read for the second time in favour of A. D. Gay, J. G. Mayne, R. A. McNicol, M.Sc., A.I.C., W. R. Orrell, B.Sc., A.I.C., L. F. Smith, M.Sc., A.R.C.S., D.I.C., A.I.C., and C. F. Turner, F.I.C.

The following were elected members of the Society:—F. R. Hill, B.Sc., A.I.C., E. T. Illing, B.Sc., F.I.C., F. Iskander, H. B. Marston, B.Sc., A.I.C., R. J. Munro, B.Sc., A.I.C., J. R. Nicholls, B.Sc., F.I.C., H. G. Reeves, D.Sc., Ph.D., F.I.C., G. Walsh, B.Sc., A.I.C., R. G. Warren, B.Sc., and W. A. Waygood, B.Sc., A.R.C.S., A.I.C.

Analysis of the Rare Earths

In a paper on "Investigations into the Analytical Chemistry of Tantalum, Niobium, and their Mineral Associates. XII. Observations on the Pyrosulphate Hydrolysis Method," Dr. W. R. Schoeller and E. F. Waterhouse showed that the pyrosulphate hydrolysis method did not effect a quantitative separation of the earth acids from zirconia. At best, a decrease in the quantity of zirconia co-precipitated was achieved, at the cost of slightly incomplete earth-acid precipitation. The hydrolytic precipitation of titania from acid sulphate solution, and of earth acids in presence of titanis, was prevented by the presence of zirconia.

Messrs. F. W. Toms and C. P. Money described a method for the "Separation of Lead Tetra-ethyl from Solution in Petroleum Spirit." The method depended on the separation of lead ethyl sulphinate on passing sulphur dioxide into "ethyl petrol," and conversion of the deposit into lead sulphate.

Determination of Vanadium

A "New Precipitation Method of Determining Vanadium and its Application to Steel Analysis," was discussed by Messrs. B. S. Evans and S. G. Clarke. The method was based on the precipitation of vanadium as ferrocyanide, and eventual determination of the vanadium present by titration with potassium permanganate. Vanadium ferrocyanide was insoluble in mineral acids of quite high concentration. In applying the process to steel analysis, the iron was quantitatively converted into ferrocyanide by reducing it from the ferric condition in alkaline citrate solution in presence of cyanide, and the resulting ferrocyanide then acted as the reagent for the vanadium. Of the methods ordinarily met with in the analysis of steel, the only one likely to interfere with the process was nickel; this was removed beforehand by treatment with dimethylglyoxime.

Further papers were read by Mr. A. L. Williams, on "Locust Kernel Gum and Oil" (work done under the Analytical Investigation Scheme), and Dr. P. Houseman, on a "Method for the Analysis of Liquorice Mass."

Review of Paint, Colour and Varnish Literature

The Research Association of British Paint, Colour, and Varnish Manufacturers has just published No. 1 (January-February, 1928), of *A Review of Current Literature Relating to the Paint, Colour, and Varnish Industries*, which should be of considerable interest to all who have any connection with the scientific or commercial aspects of these industries. The present number covers 31 pages, and the entries are grouped under 14 headings; in each case author, title, and reference are given, followed in general by an abstract. A special section is devoted to new books and reviews. Alternate pages are conveniently left blank, thus permitting of the addition of further notes. The publication is issued from the Paint Research Station, Waldegrave Road, Teddington, Middlesex.

Cellulose Agreement

It is reported that discussions recently took place in Dresden between the Czechoslovak and German cellulose works concerning the renewal of the export contingent of cellulose from Czechoslovakia and Germany. It was resolved to continue the present contingent of 30,000 metric tons annually, the agreement in respect of which was to have expired on June 30.

Chemical Properties of Crystals

Professor Desch's May Lecture

The annual May lecture was delivered before the Institute of Metals in London on Tuesday by Professor C. H. Desch, F.R.S., on "The Chemical Properties of Crystals," Dr. W. Rosenhain, F.R.S., president, in the chair.

After referring to the light thrown on the mechanical and physical properties of crystals by modern ideas as to the atomic structure of matter and the internal structure of the atom, the lecturer discussed the various ways in which atoms might be held together in a crystal, by the simple exchange or sharing of electrons, or by residual forces. In rock salt the molecule had disappeared, but there were many substances which were built up of molecules in the solid as well as in the liquid state. In a few simple cases it had been found impossible to calculate the forces of attraction in a particular face of a crystal, and in that way the differing chemical properties of different faces might be explained. Such differences accounted for the varying habit of crystals of the same substance grown under different conditions. When a metal was attacked by an acid, the surface was not dissolved uniformly, but distinct "etch-figures" were produced, and the shape of those must be intimately related to the internal structure of the metal crystals. The figures might vary in the most curious way when the solvent was changed, and that was shown most clearly by large single crystals of copper.

The compounds of metals with one another had puzzled chemists, as they did not follow the ordinary rules of valency, and had many anomalous properties. The modern view of the constitution of the atom made it possible to explain them, and the relations which had been found between the forces of cohesion and of chemical affinity made it likely that there was a gradual transition from the simplest solid compounds, such as salts, through intermetallic and other compounds, to solid solutions which were regarded as mixtures. The chemical properties of crystals were most easily illustrated by substances which did not consist of closely packed atoms, but had an open structure, such as graphite. Looseness of structure was also important for diffusion in solids, on which many technical processes depended.

The Chemists' Exhibition

The thirty-third Chemists' Exhibition, organised by the *British and Colonial Pharmacist*, was held this week from Monday to Friday at Holland Park Hall, London, and several interesting products were on view at the stands of fine and pharmaceutical chemical manufacturers. The British Drug Houses had a window devoted to a display of "Radio-Malt," containing vitamin D in concentrated form. This was also shown on their main stand, together with vitamin D in pellet and liquid form. Ethers, alkaloids, and colloidal lead iodides were also among the products shown, together with a number of proprietary lines. Another exhibit of vitamin D products in pellets and solution was shown by H. R. Napp, Ltd., under the name of "Vigantol." This firm is the British representative of E. Merck, of Darmstadt, and they showed a range of Merck's fine chemicals and pharmaceutical products. "Ephetonin," a synthetic ephedrine, was also shown. Allen and Hanburys, Ltd., displayed a new adsorbent preparation, "Charkaolin" (charcoal and kaolin) for the treatment of intestinal infections. "Monsol," an antiseptic for internal or external use, was displayed by the Mond Staffordshire Refining Co., Ltd. This is prepared as an ointment, in pellets or as a germicidal solution. Howards and Sons, Ltd. of Ilford, made a special feature of their aspirin in tablets and as a powder, and also showed isopropyl alcohol, for use in making essences and perfumes, synthetic menthol and their standard anaesthetic ether, which is in use in many hospitals to-day. Mixing and sifting machines for dry powder, spices and for moist materials were to be seen at the exhibit of William Gardner (Gloucester), Ltd., while a display of balances for the analyst, the chemist and the druggist was shown by De Grave, Short and Co., Ltd. Among the firms exhibiting chemical and medical glassware were Beaton Clark and Co., Ltd., the International Bottle Co., Ltd., Johnsen Jorgensen Flint Glass, Ltd., and the United Glass Bottle Manufacturers, Ltd.

Customs Duty on Hydrocarbon Oils

THE Commissioners of Customs and Excise have issued a revised notice with regard to the duty on hydrocarbon oils. The duty applies to all petroleum oils, coal tar, and oils produced from coal, shale, peat, or bituminous substances, and all liquid hydrocarbons. There will be a rebate equal to the full duty on such of these oils as are not "hydrocarbon oils, or mixtures containing hydrocarbon oils, of which oils or mixtures not less than 50 per cent. by volume distils at a temperature not exceeding 185° Centigrade, or of which not less than 95 per cent. by volume distils at a temperature not exceeding 240° Centigrade, or which give off an inflammable vapour at a temperature not less than 22·8° Centigrade when tested in the manner prescribed by the Acts relating to petroleum" (afterwards referred to in the notice as light hydrocarbon oils other than kerosene), except in cases where they are intended for treatment in a refinery. In the latter event, liability to the full duty will continue to attach until the hydrocarbon oils have passed through the refinery. The net effect is that light hydrocarbon oils other than kerosene (*e.g.*, petrol, benzol, white spirit, turpentine, etc.) will be liable to the duty if imported or produced from imported material. Imported goods (paints, varnishes, etc.) containing dutiable oils will be liable to duty on the quantity of such oils used in their manufacture.

Survey of British Iron and Steel Industry

THE Balfour Committee on Industry and Trade has just published a survey of the metal industries of this country (H.M. Stationery Office, pp. 500, 5s.) In regard to iron and steel the committee express the view that the efficiency of plant in the heavy branches of the British industry is less uniform than it is in Germany or America. Only a few British works, they say, are modern throughout in equipment and practice, and there is not infrequently a lack of balance between the productive capacity at different stages, *e.g.*, deficient coke oven or blast furnace capacity. In the application of methods of fuel economy, Great Britain is considerably behind the Continent, and to some extent as regards the efficiency of the coke oven plant and the organisation of the coking industry. But Britain's lead in quality applies both to the kinds of iron and steel used in large quantities, and to the "special" qualities used in relatively small quantities.

Secretary Appointed to New Finance Company

LIEUT.-GENERAL SIR LOUIS RIDLEY VAUGHAN has been appointed secretary of the Finance Company of Great Britain and America, Ltd., which was recently launched with Sir Alfred Mond as chairman. Sir Louis's retirement from the Indian Army was gazetted on Saturday, May 5. Sir Louis Vaughan is the second son of Mr. Cedric Vaughan, of Leyfield House, Millom, Cumberland. He was born in 1875, educated at Uppingham and the Royal Military College, and entered the army at the age of 20. For his services in the Great War he was awarded the 1914 Star, the C.B., and the D.S.O., and was mentioned in despatches nine times. He was knighted in 1922.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

95. (*Synthetic Resins*).—A Liverpool firm is anxious to obtain some information on the manufacture of synthetic resins as applied to moulding powders, and to know what modern works or other literature are available on the subject.

96. (*Toluol Standards*).—A London firm state that they have received an inquiry for toluol, quality equal to the British Engineering Standard, and ask for advice as to the tests for this standard.

97. (*Waterproofing Solutions*).—A firm interested in the preparation of waterproofing solutions is desirous of obtaining information on equipment of plant for such work.

Chemical Matters in Parliament

Morphine Exports

Mr. Scrymgeour (House of Commons, May 7) asked the Secretary of State for Foreign Affairs whether he was aware that the world output of morphine had increased between 1921 and 1926 from 30 to 60 tons; and whether, in view of the statement of the Italian representative to the League of Nations that the British Government had concealed the real figures of British drug exports, he had any official information to explain the difference between the amount of drugs imported into America and the amount admitted by British exporters. Mr. Locker-Lampson, in reply, stated that the reply to the first part of the question was in the negative. A statistical summary issued by the League gave the production for 1926 as 40,245 kilos and the production for 1921 as 29,657 kilos (about 40 and 30 tons respectively), but complete statistics were not available. Both the figures in question were incomplete. Any comparison between them would be unsafe. The 1926 figure included large quantities of morphine produced for transformation into non-dangerous products. He was not aware that the Italian representative on the Advisory Committee charged His Majesty's Government with concealing their drug exports. He drew attention to the fact that the amount of raw opium returned by Great Britain as exported to the United States was less than the amount of raw opium returned by the Government of the United States as imported from Great Britain. This discrepancy was being examined by the two Governments, but was probably due, in part, to the fact that the returns of the two Governments related to different periods.

The Dead Sea Salts Concession

Col. Howard Bury (House of Commons, May 7) asked the secretary of State for the Colonies whether any special chemical knowledge was required from the applicants for the Dead Sea salts concessions; and whether Mr. Novomeysky and Major Tulloch had any such qualifications. Mr. Amery, in his reply, said that applications were invited by advertisement. No reference was made in the advertisement to special chemical knowledge. In reply to a further question by Col. Howard-Bury, Mr. Amery stated that when tenders were invited it was not practicable to lay down any conditions as regards the amount of finance to be guaranteed by applicants who sent in tenders before December 31, 1926. Answering Sir Frederick Hall, Mr. Amery said he was not in a position to make any statement regarding the granting of the Dead Sea concession. They naturally desired to give preference to British capital wherever they could, but under the terms of the mandate were precluded from giving actual direct preference as between British and other subjects.

In a written answer to Captain Cazalet, Mr. Amery stated that he was approached in February last by a firm of chartered accountants acting on behalf of a British group desiring to interest itself in the exploitation of the Dead Sea salts. The firm were informed in reply that it had been decided in principle to grant a concession to other applicants, and that, unless and until the negotiations with those applicants proved abortive, it was not possible to entertain other offers.

Reconstituted and Synthetic Cream

Mr. Everard (House of Commons, May 8), asked leave to bring in a bill to control the production, distribution and sale of reconstituted and synthetic cream. The Minister of Health, the hon. member said, had prohibited from January 1 of this year the use of any preservative in the manufacture or sale of cream. One of the effects of this had been materially to increase the use in this country of synthetic and reconstituted cream. A very large number of people in this country were installing emulsifiers which produced from imported milk powder and butter, or from milk powder and margarine, and water, reconstituted or synthetic cream. The bill would put the cream trade under the Milk and Dairies Consolidation Act. It gave the Minister of Health power to make special orders for the registration of manufacturers of reconstituted and synthetic cream with the local authorities, also the registration of the sellers of the article and the marking of vessels. Leave was given and the bill was read a first time.

From Week to Week

SIR ALFRED MOND, who is at present Member of Parliament for the Carmarthen Division, has announced that he will not contest the constituency again.

SIR LENNON RAWS, managing director of Nobels (Australasia) Ltd., has accepted a seat on the board of Wallaroo-Mount Lyell Fertilisers, Ltd.

PROFESSOR W. D. HARKINS, professor of physical chemistry at the University of Chicago, has been awarded the Willard Gibbs Medal of the American Chemical Society.

BROTHERTON AND CO., LTD., advertise works sites at Liverpool and Wakefield with direct rail and canal access, for lease or sale. Details are given in our advertisement columns, p. xxxiv.

THE CHEMICAL NATIONAL BANK of New York held a stockholders meeting on May 2, when sanction was given to the board's proposal for increasing the capital of the bank from $5,000,000 to $6,000,000.

MR. ALFRED RUDGE, who is retiring from the chairmanship of the Newcastle Section of the Society of Chemical Industry, was entertained by members of the section at a dinner held on Friday, May 4.

EUROPEAN ZINC PRODUCERS, at a meeting at Brussels on Monday, decided to establish an organisation to collect statistics, control production, and regularise markets. The co-operation of American producers is to be invited.

LEONARD HILL ADVERTISING, LTD., announce that as from May 7, their address has been changed from 173-5, Fleet Street, E.C.4, to Thanet House, 231–2, Strand, London, W.C.2. Their telephone number, Central 8217, remains unchanged.

THE INTERNATIONAL WHALE-OIL POOL has purchased 80,000 to 100,000 tons of whale-oil (representing 75 to 80 per cent. of the total world production for the season 1928–29) for delivery April-August, 1929, at a total cost of between £2,000,000 and £3,000,000.

SALES OF NITRATE OF SODA reported by the Producers' Association since the introduction of free selling on April 14, 1927, up to April 15, 1928, a full year, amounted to 3,233,893 metric tons, states a message from the Valparaiso branch of the Anglo-South American Bank, this figure including 277,126 tons disposed of for delivery in 1928–29.

RECENT WILLS INCLUDE Mr. Francis Corder Clayton, manufacturing chemist, of Birmingham, £136,445 (net personalty, £130,420). He bequeathed to the University of Leeds, free of duty, £2,000 Great Western Railway stock to found a "Richard Reynolds Scholarship," in memory of Richard Reynolds, who gave him training in commercial analysis.

MR. F. H. ROSENCRANTS, B.Sc., engineering director of International Combustion, Ltd., who has recently been out to Central and South America in connection with "Lopulco" pulverised fuel interests, arrived back in England on May 2. He indicates that there is a good deal of activity in connection with power station development throughout Latin America, and that considerable expansion may be expected to take place within the very near future.

THE FOLLOWING PAPERS WILL BE READ at the meeting of the Chemical Society on Thursday, May 17, at 5.30 p.m., at Burlington House, London :—"Neocyanine," by F. M. Hamer; "Syntheses of cyclic compounds. Part III. The reduction of some unsaturated cyano-esters with moist aluminium amalgam. A new synthesis of mono-substituted malonic acids and of $\beta\beta\beta^1\beta^1$ tetramethyladipic acid. Further evidence for the multiplanar configuration of the cycloheptane ring," by I. Vogel; "The action of fluorine upon aqueous solutions of chromium and manganese salts," by F. Fichter and E. Brunner.

Mr. S. SABIONCELLO, who recently bought control of the Alianzo Co. from Mr. Agustin Edwards, has, it is reported, now bought the controlling interest in the Pan de Azucar Nitrate Co. from Baburizza and Co., Ltd., at a price of 48s. per share. This will raise the annual output controlled by Mr. Sabioncello to about 300,000 tons. Following on the purchase of control of the Pan de Azucar Nitrate Co., Messrs. J. O. Herrera, B. N. Benaz, T. T. Aikman, and E. C. Goddard have resigned from the board of the latter, and Messrs. S. Sabioncello, J. Maritano, W. E. Wells, and G. Savage have been appointed to fill the vacancies.

ARTIFICIAL SILK NEWS.—It is reported that a new holding company, known as Société Financière Internationale de Soie Artificielle, has been formed by Mr. A. Loewenstein, with a capital of 219 millions francs. The object is to control his French artificial silk interests and to develop subsidiaries. The report also suggests that Mr. Loewenstein's new Belgian-Canadian company will start artificial silk production in Canada.—The Yorkshire Artificial Silk Company, Ltd., has been registered with a capital of £325,000, in 225,000 10 per Cent. Preferred Ordinary shares of £1 each, and 1,000,000 Deferred shares of 2s. each. The undertaking has been formed to manufacture artificial silk yarns and staple fibre by the viscose process, and it is understood that a public issue will be made shortly.

BAKER PERKINS, LTD., of Peterborough, have given 100 guineas to the Lord Mayors' Fund for the relief of distress in the coal-fields.

ALL OF THE WORKERS at the Castner-Kellner Works at Weston Point who have attained the age of 65 years, are to be retired on July 2, many of them receiving a pension.

MR. THOMAS G. BAMFORD, senior lecturer in metallurgy at the University of Birmingham, has been appointed principal of the County Technical College, Wednesbury.

A SERIOUS FIRE occurred in the early hours of Friday, May 4, at Britannia Works, Renfrew, occupied by Dowie and Smith, varnish and paint manufacturers. Numbers of turpentine and oil drums exploded.

MR. W. L. WRIGHT, technical chemist to the Department of Scientific and Industrial Research, New Zealand, has been appointed technical liaison officer for the same department in England, with headquarters in London.

ENGLISH CAPITALISTS AND CHEMISTS, says a message from Kingston, Jamaica, are now in the island studying the problem of the establishment of a large sugar refinery capable of refining the whole of the sugar output of the island.

GRANTS-IN-AID will be allocated in July by the committee of the Salters' Institute of Industrial Chemistry to young men and women (not under 17 years of age) employed in chemical works in or near London who desire to extend their education for a career in chemical industry. Details regarding applications, etc., will be found in our advertisement columns, p. xxxiii.

ALBERT STEVENS, aged 26, and Joseph Reed, aged 17, two Bootle labourers, were burned to death at the tar distilling premises of J. E. C. Lord, Hawthorne Road, Bootle, on Friday, May 4, and William Gee, another labourer, was burned about the face and hands. Stevens and Reed were cleaning an iron tar cooler when there was an explosion and the entire row of coolers burst into flames.

FELLOWSHIPS (£250–£300 per annum or higher) are available for application by chemists of post-graduate standing desirous of adopting a career in industrial chemistry. Applications should be received by the Director, The Salters' Institute of Industrial Chemistry, Salters' Hall, St. Swithin's Lane, London, E.C.4, on or before June 1, 1928. Further particulars may be obtained from the Director.

GIFTS of approximately $360,000 have been received by the American Chemical Society, for use in "recording and indexing the chemical literature of the world." Of this amount, $250,000 was the gift of the Chemical Foundation, Inc., of New York, of which Francis P. Garvan is president, and the balance was the contribution of leaders in the chemical and dyestuff industry of the United States, with the Allied Chemical and Dye Corporation one of the largest contributors to the fund.

MELDRUMS, LTD., of Timperley, announce that during the past three or four months they have received orders for forced draught furnaces with smoke consumer to no fewer than 80 boilers, mainly of the Lancashire and Cornish types. These orders have come from a large variety of industries. During the same period 45 Meldrum refuse destructors were also ordered, ranging in size from the small domestic type, burning 25 lb. of refuse per hour, up to those for trade and municipal purposes. Twenty sets of the Meldrum portable disinfector have also been ordered. The Borough Engineer for Burton-on-Trent, in reference to the Meldrum's stokers fixed on three boilers at the sewage pumping station for eight years, informs the firm that they have proved very satisfactory, and that the total cost of upkeep of the three sets in eight years has not exceeded £30.

THE CHEMIST'S PART IN IMPROVING industrial effluents was referred to at a meeting of the Royal Sanitary Institute at Worcester on Friday, April 27, by Mr. Cecil Duncan (county and city public analyst) in a paper on "River Pollution." Alluding to the River Stour, he said it had been contaminated with acid waste from the galvanising factories, but there was an improvement compared with 30 years ago. The sewage of Kidderminster was pumped and subjected to land treatment, and did not contaminate the river. At times the river water at Kidderminster was coloured, the colours having the appearance of dyes. In that district a large sugar factory had been erected, the effluent from which was very great, and the situation was being watched carefully. Another Worcestershire river, the Salwarpe, received the sewage effluent from Droitwich and at times the water was salt to the taste, and could never be used as a water supply, even after filtration.

Obituary

MR. T. JENNINGS, of Mansfield, works manager of W. F. Wharmby, manufacturing chemists, aged 68, recently.

MR. MALCOLM GARSIDE, aged 54, analytical chemist, at his residence, 63, London Road, Stockton Heath, on Sunday, April 22.

MR. WILLIAM WINDUS, formerly manager and director of the Netham Chemical Works, Bristol, of the United Alkali Co., at Bristol, recently. An extended obituary notice appears on another page.

References to Current Literature

British

ANALYSIS.—An examination of a method of estimating iron and sulphur in sulphides of iron. P. L. Robinson, L. A. Sayce, and J. Stevenson. *J. Chem. Soc.*, April, pp. 813–814.

GENERAL.—Constitution of liquids: Some new experiments. Presidential address to the Chemical Society. H. B. Baker. *J. Chem. Soc.*, April, pp. 1051–1055.

A new effect of chromic acid on photographic plates. E. P. Wightman and S. E. Sheppard. *Photographic J.*, May, pp. 201–205.

HIGH PRESSURE SYNTHESIS.—Syntheses under high pressure. Interaction of carbon monoxide and hydrogen. G. T. Morgan, R. Taylor, and T. J. Hedley. *J.S.C.I.*, May 4, pp. 117–122.

OILS.—The unsaponifiable matter from the oils of elasmobranch fish. IV. The establishment of the structure of selachyl and butyl alcohols as monoglyceryl ethers. I. M. Heilbron and W. M. Owens. *J. Chem. Soc.*, April, pp. 942–947.

ORGANIC.—Some dinitroethylbenzenes. O. L. Brady, J. N. E. Day, and P. S. Allam. *J. Chem. Soc.*, April, pp. 978–982.

VULCANISATION.—Further experiments on the influence of fatty acids on vulcanisation. G. S. Whitby and B. A. Evans. *J. S. C. I.*, May 4, pp. 122–126T.

United States

ANALYSIS.—A variation of the Carius method for the determination of sulphur. V. C. Rogers and G. Dougherty. *J. Amer. Chem. Soc.*, April, pp. 1231–1232.

GENERAL.—Deflocculation and detergency not entirely correlative. A report on detergency experiments on cotton soiled with carbon black. R. M. Chapin. *Oil and Fat Ind.*, April, pp. 95–106. Comparative tests were made on the power of soap solutions to prevent adsorption of suspended carbon black by clean fabric. Acid soaps were the more effective, probably owing to masking of adsorptive affinities by an oily film of fatty acid.

Furfural and carbon dioxide from wood before and after chlorination. G. J. Ritter and L. C. Fleck. *Ind. Eng. Chem.*, April 1, pp. 371–373.

Grading of commercial gelatin and its use in the manufacture of ice cream. I. D. C. Carpenter, A. C. Dahlberg, and J. C. Hening. *Ind. Eng. Chem.*, April 1, pp. 397–406.

Effect of temperature and time of burning upon the properties of high-calcium lime. K. W. Ray and F. C. Mathers. *Ind. Eng. Chem.*, April 1, pp. 415–419.

Lead pigment presents highly developed technology. J. B. Nealey. *Chem. and Met. Eng.*, April, pp. 219–220.

OILS AND FATS.—Rancidity determinations. Calling attention to a possible source of error in the Kreis test. W. C. Powick. *Oil and Fat Ind.*, April, pp. 107–108.

ORGANIC.—The liberation of hydrogen from carbon compounds. III. The interaction of monatomic alcohols and esters with fused caustic alkalies. H. S. Fry and E. Otto. IV. The interaction of glycol and glycerol with fused caustic alkalies. H. S. Fry and Else L. Schulze. V. The interaction of dextrose, lævulose, sucrose, and cellulose with fused caustic alkalies. H. S. Fry and E. Otto. *J. Amer. Chem. Soc.*, April, pp. 1122–1131, 1131–1138, 1138–1144.

The preparation of *p*-iodoanisole. F. F. Blicke and F. D. Smith. *J. Amer. Chem. Soc.*, April, pp. 1229–1231.

Studies on gossypol. III. The oxidation of gossypol. E. P. Clark. *J. Biol. Chem.*, April, pp. 81–87.

PLANT.—Modified circulation system improves operation of chamber plant. E. L. Larison. *Chem. and Met. Eng.*, April, p. 229.

Special motors reduce hazards in explosive atmospheres. R. H. Rogers. *Chem. and Met. Eng.*, April, pp. 232–233.

RUBBER.—Direct determination of rubber in soft vulcanised rubber. A. W. Kemp, W. S. Bishop, and T. J. Lackner. *Ind. Eng. Chem.*, April 1, pp. 427–429. A modification of the Wijs method is shown to be suitable for determining the rubber content of vulcanised rubber. A procedure for the direct determination of sulphur combined with rubber is outlined. The effect of compounding ingredients is shown.

Measurement of resistance of vulcanised rubber to penetration of benzene and other combustible substances. F. C. Schmelkes. *Ind. Eng. Chem.*, April 1, pp. 430–431.

German

ANALYSIS.—A rapid method for the determination of zinc. G. Spacu and J. Dick. *Zeitschrift analytische Chem.*, Vol. 73, Parts 9–10, pp. 356–359.

The detection and determination of benzine, benzene, alcohol, ether, and tetralin in motor fuels. Dr. Formánek. *Chemiker-Zeitung*, April 25, pp. 325–326; May 2, pp. 346–348.

The detection of hydroxylamine. J. Blum. *Biochemische Zeitschrift*, Vol. 194, Parts 4–6, pp. 385–391.

The quantitative determination of acetaldehyde by various methods. J. Wagner. *Biochemische Zeitschrift*, Vol. 194, Parts 4–6, pp. 441–452.

APPARATUS.—A drying apparatus. A. Oppé. *Chemische Fabrik*, May 2, p. 241.

Innovations in analytical balances. E. Löwenstein. *Chemische Fabrik*, May 2, pp. 243–245.

CELLULOSE.—The behaviour of cellulose on heating under pressure with water. E. Berl and A. Schmidt. *Annalen*, Vol. 461, Part 2, April 30, pp. 192–220.

FIRE EXTINCTION.—Foam fire-extinguishing installations in the chemical industry. J. Hausen. *Chemiker-Zeitung*, May 2, pp. 348–349.

GENERAL.—More chemists in industry and management. New domains of activity for chemists: The metal industry. II. Founding. W. Denecke. *Chemische Fabrik*, May 2, p. 247.

An attempt at the electro-catalytic reduction of carbon monoxide. G. Fester and M. Schivazappa. *Zeitschrift anorganische Chem.*, Vol. 171, Parts 1–2, pp. 163–167.

Chemical rays. H. Plauson. *Chemiker-Zeitung*, April 28, pp. 337–340; May 5, pp. 357–359.

The manufacture of water-glass. M. von Reiboldt. *Chemiker-Zeitung*, May 2, pp. 345–346.

The separation of the isotopes of potassium. G. von Hevesy and M. Lögstrup. *Zeitschrift anorganische Chem.*, Vol. 171, Parts 1–2, pp. 1–13.

HIGH PRESSURE PLANT.—Fittings, especially high pressure fittings for the chemical industry. Dr. Eckelmann. *Chemische Fabrik*, April 4, pp. 181–183; April 18, pp. 213–215; April 25, p. 231; May 2, pp. 245–246.

ORGANIC.—Contribution to the knowledge of oxidation reactions. II. The oxidation of toluene by means of nitric acid and nitrogen oxides in the presence of oxygen. P. Askenasy and E. Elöd, with C. Trogus. *Annalen*, Vol. 461, Part 2, April 30, pp. 109–130.

SILICA GEL.—Contribution to the knowledge of active silicic acids (silica gel). E. Berl and H. Burckhardt. *Zeitschrift anorganische Chem.*, Vol. 171, Parts 1–2, pp. 102–125.

Miscellaneous

GENERAL.—Carbon tetrachloride and its use as an extinguisher. L. Mauge. *L'Industrie Chimique*, April, pp. 186–189 (in French).

Elimination of colloids by filtration through animal charcoal in cane-sugar refineries. H. S. Paine and Badollet. *Revue Générale des Colloïdes*, November-December (1927), pp. 749–756 (in French).

ORGANIC.—The condensation of cyclohexene with some aromatic hydrocarbons in the presence of aluminium chloride. D. Bodroux. *Comptes Rendus*, April 11, pp. 1005–1006 (in French).

RUBBER.—Studies on the ageing of vulcanised rubber. V. Action of sunlight and heat on the mechanical properties of vulcanised rubber. VI. Action of sunlight filtered with coloured glasses on the mechanical properties of vulcanised rubber. T. Yamazaki. *J. Soc. Chem. Ind., Japan* (supplemental binding), March, pp. 65–66 B, 66–67 B (in English).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

288,346. CONDENSATION PRODUCTS OF UREA AND FORMALDEHYDE, MANUFACTURE OF. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 1, 1926. Addition to 258,289.

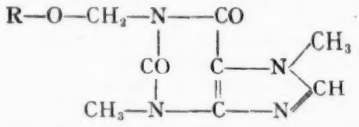
Specification No. 258,289 (see THE CHEMICAL AGE, Vol. XV p. 501) describes the condensation of urea and formaldehyde in a weakly acid solution in which the concentration of hydrogen ions is maintained at a constant value of PH=4–7 with the aid of a suitable buffer compound. Water is evaporated below 50° C., and the product hardened by heating to 100° C. In this invention, the process is modified by maintaining the concentration of hydrogen ions at a value of PH=4–6. Water is evaporated at a temperature below 50° C. the concentration of hydrogen ions being then maintained at PH=6–7. The proportions are preferably one molecule of urea to 1.5—1.7 molecules of formaldehyde.

288,358. DYES. B. Wylam, J. E. G. Harris, J. Thomas and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Stirling. Application date, December 29, 1926, and July 13, 1927.

Dyestuffs and dyestuff derivatives including leuco compounds are obtained in the form of dry powders by adding to the wet paste a quantity of a substance capable of combining with the water to form a solid compound containing water of crystallisation or hydration, and preferably yielding an alkaline or neutral product. The preferred substance is anhydrous sodium carbonate, the amount added being such as to form the heptahydrate. Alternatively, disodium hydrogen phosphate or fused sodium acetate can be used, or a substance which is neutral to litmus such as sodium sulphate. The paste which is treated, may be a paste of the sodium salt of disulphuric acid ester of leuco indigo, and it may be treated with anhydrous sodium carbonate. The process can be used with dyestuff pastes in general.

288,366. PHARMACEUTICAL COMPOUNDS, MANUFACTURE OF, I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany, K. Schranz, 132, Brillerstrasse, Elberfeld, Germany, and C. Lutter, 9, Buschenburgstrasse, Barmen-Langenfeld, Germany. Application date, January 6, 1927. Addition to 242,296

Specification No. 242,296 (see THE CHEMICAL AGE, Vol. XIV, p. 58), describes the preparation of a pharmaceutical product (probably 1-methoxy-methyl-3 : 7-dimethyl-xanthine) by treating theobromine with chloromethyl ether. In this invention, theobromine, or a salt, is treated with an ether of the general formula $R\text{-}O\text{-}CH_2Cl$ of higher molecular weight than chloromethyl ether, where R is an alkyl group higher than methyl or an aralkyl group. The products have the general formula :—



Examples are given of the production of 1-ethoxy-methyl-3 : 7-dimethyl-xanthine and 1-isopropyloxymethyl-3 : 7-dimethyl-xanthine, and others. The chloromethyl ethers employed as starting materials are obtained by the interaction of the corresponding alcohols with formaldehyde and hydrochloric acid. Some of these substances are highly soluble in water, and all are very soluble in sodium salicylate solution with the formation of double salts.

288,370. COMPLEX ANTIMONY COMPOUNDS, MANUFACTURE OF. W. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges, Frankfort-on-Main, Germany. Application date, January 7, 1927. Addition to 271,940.

Specification No. 271,940 (see THE CHEMICAL AGE, Vol. XVII, p. 62) describes the reaction of an antimonyl compound of such polyphenols as contain two hydroxyl groups in the ortho position to each other, or a substitution product with a neutral salt of such aliphatic carboxylic acids as contain in the molecule easily migratory hydrogen atoms, or a neutral salt of an aliphatic oxycarboxylic acid. In this invention, the second reaction compounds specified above are replaced by neutral salts of carboxylic or sulphonic acids of such polyphenols as contain two hydroxyl groups in the ortho position to each other. Suitable compounds of this type include gallic acid, gallo-carboxylic acid, pyrocatechin-disulphonic acid, and 2 : 3-dioxy-naphthalene-disulphonic acid. The products are easily soluble in water.

288,390. INORGANIC ACID POTASSIUM SALT, BETAINE SALT, AND GLUTAMIC ACID, METHOD OF COLLECTING FROM WASTE LIQUOR PRODUCED IN DISTILLING ALCOHOL FROM FERMENTING BEET MOLASSES. Y. Takayama, 44, Tosaki Cho, Koishikawa Ku, Tokyo, Japan. Application date, January 22, 1927.

The waste liquor is dialysed to remove yeast and uncrystallisable substances which make crystallisation and filtration difficult. The solution is then concentrated and hydrochloric acid added while the temperature is kept at about 100° C. Potassium chloride crystallises and is withdrawn, and the liquid again concentrated to crystallise betaine hydrochloride with a small quantity of potassium chloride. Hydrochloric acid is again added and the liquor heated under pressure to convert substances which hinder crystallisation into a humus-like substance, and at the same time glutimic acid into glutamic which is then collected in the form of a hydrochloride.

288,436. RECOVERING AMMONIA FROM AMMONIACAL LIQUOR. South Metropolitan Gas Co., P. Parrish, F. C. Snelling and O. W. Weight, 709, Old Kent Road, London, S.E.15. Application date, April 13, 1927.

The waste gases from the carbonising retorts or ovens are passed through a waste heat boiler and then through a tubular heater. The steam in the boiler passes to the ammonia still, and the ammoniacal liquor is pumped through the tubular heater to preheat it on its way to the still.

288,441. CYCLIC KETONES OF THE AROMATIC SERIES, MANUFACTURE OF. O. Y. Imray, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 26, 1927.

These ketones are obtained by combining olefine carboxylic acids or their hydrogen halide addition products with hydrocarbons of the aromatic series, homologues or halogen substitution products, in the presence of an acid condensing agent such as aluminium chloride or concentrated sulphuric acid at a raised temperature, with or without a solvent. The products are mixtures of isomeric cyclic ketones which can be easily separated. The cyclic ketones are intermediate products for the manufacture of dyestuffs. Examples are given of the combination of benzene and β-chloro-propionic acid, toluene and β-chloro-propionic acid, chlorobenzene and β-chloro-propionic acid, benzene or chloro-benzene, or meta-xylene and β-chloro-butyric acid, chlorobenzene and crotonic acid, ortho and meta dichlorobenzene and meta-xylene and crotonic acid.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—265,170 (Aluminium Industrie Akt.-Ges) relating to aluminium, see Vol. XVI, p. 47 (Metallurgical Section) ; 265,203 (J. R. Geigy Akt.-Ges.) relating to mordant dyeing dyestuffs, see Vol. XVI, p. 381 ; 267,162 (Soc. of Chemical Industry in Basle) relating to dyestuffs, see Vol. XVI, p. 468 ; 273,718 (N. Caro and A. R. Frank) relating to concentrated nitric acid, see Vol. XVII, p. 242 ; 279,506 (I. G. Farbenindustrie Akt.-Ges.) relating to diacidyl derivatives of naphthalene and acenaphthene, see Vol. XVII, p. 623.

International Specifications not yet Accepted

286,272. SYNTHETIC RUBBER. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, March 2, 1927.

Isoprene, budadiene, and dimethyl-butadiene are polymerized in an aqueous colloidal solution or suspension containing electrolytes, such as salts, acids, or bases. The emulsifying substances include soaps, albumens, carbohydrates, inorganic suspensoids such as metals or metallic oxides, and suspensions such as finely divided metallic oxides. Oxygen or ozone may be present.

286,274. DYES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on Main, Germany. International Convention date, March 2, 1927.

A diazotised 4-amino-diphenylamine containing one or more *alkyl, alkyloxy, or halogen groups is coupled with an* arylide of 2:3-oxynaphthoic acid to obtain monoazo dyes insoluble in water. Examples are given.

286,282. FERTILISERS. N. Caro, 8, Budapesterstrasse, Berlin, and A. R. Frank, 138, Kurfürstendamm, Halensee, Berlin. International Convention date, March 3, 1927. Addition to 279,421.

A fertiliser is obtained by the action of ammonia on heated calcium carbonate, and the alkalinity is varied by treating it to vary the proportion of lime to calcium carbonate. Lime is formed by heating the product to 900° C. in neutral gas, and carbonate is formed by treating with carbon dioxide at 300°-600° C.

286,284. CATALYTIC MATERIALS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, March 3, 1927.

Catalysts of the metal oxide type which are mechanically stable are obtained by adding magnesium sulphate, chloride or nitrate to the other components. Examples are given of the treatment of zinc oxide with magnesium chloride and chromic acid, and the use of the catalyst in the production of methanol,

286,288. PRESERVING RUBBER. Goodyear Tyre and Rubber Co., 1144, East Market Street, Akron, Ohio, U.S.A. (Assignees of L. B. Sebrell, R.D.I., Cuyahoga, Ohio, U.S.A.) International Convention date, March 3, 1927.

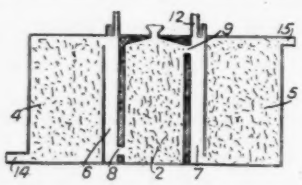
The ageing qualities of rubber are improved by adding, before vulcanisation, a reaction product of an aldehyde and an amine.

286,290. PHOSPHORUS. Compagnie Nationale de Matières Colorantes et Manufactures de Produits Chimiques du Nord Réunies Etablissements Kuhlmann, 11, Rue de la Beaume, Paris. International Convention date, March 3, 1927.

The condensate obtained by heating phosphates, silica and coal, in an electric or other furnace, is distilled in superheated steam below the boiling point of phosphorus to obtain white phosphoros. The mixture of steam and phosphorus vapour may be reacted to obtain phosphoric acid and hydrogen.

286,291. HYDROGEN. Compagnie Nationale de Matières Colorantes at Manufactures de Produits Chimiques du Nord Réunies Etablissements Kuhlmann, 11, Rue de la Beaume, Paris. International Convention date, March 3, 1927.

Hydrogen is obtained by heating hydrocarbons above 1,200° C. in the presence of impregnated coke or refractory



286,291

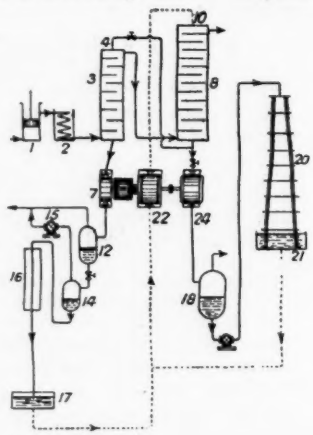
material. Coke oven gas passes through pipe 14 to a heat recuperator 4, and then through chamber 6 and passage 8 to reaction chamber 2 containing coke. The gas then passes through chamber 7 and recuperator 5 to the outlet. The gas is then displaced by the passage of combustion gases, the carbon dioxide in which is converted into carbon monoxide which burns in chamber 7 by means of air supplied at 12. Air is then passed in at 14 to burn the deposited carbon, and the combustion gases are used in the scavenging step. The gases are then again displaced by passing gas through in the reverse direction, and the cycle is repeated, beginning at 15. The hydrogen obtained is used in ammonia synthesis.

286,602. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Maine, Germany. International Convention date, December 14, 1925.

Bz 1 : Bz 1^1-dibenzanthronyls containing halogen or methyl groups but not substituted in the 2- and 2^1-positions are treated with alkaline condensing agents to obtain halogen- or methyl-dibenzanthrones. Bz 2 : Bz 2^1-dimethyl-Bz 1 : Bz 1^1-dibenzanthronyl is first obtained by treating with acid oxidizing agents the Bz 2-methylbenzanthrone obtained by condensing anthrone with α-methylacrolein, and is then heated with ethyl-alcoholic potash at 120°-130° C.

286,622. PURIFYING GASES. Ges. für Lindes Eismaschinen Akt.-Ges., Höllriegelskreuth, near Munich, Germany. International Convention date, March 5, 1927.

Lignite gas containing 7·5 per cent. sulphuretted hydrogen and 30 per cent. carbon dioxide is compressed in a compressor 1 and then cooled in a refrigerator 2. Sulphuretted hydrogen



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is absorbed in water in a tower 3, and the gas then passes to a tower 8 fed with a larger quantity of water at 10. Water from the tower 3 passes through a turbine 7, and gas containing 25 per cent. of sulphuretted hydrogen is separated in vessels 12 and 14, and passed to Claus furnaces to recover sulphur. Further traces of sulphur are removed by ferric oxide or sulphur dioxide in a tower 16. Water from the tower 8 passes through a turbine 24, and gas containing 75 per cent. carbon dioxide is separated in vessel 18. More carbon dioxide is expelled from the water by aeration in a tower 20.

286,633. PURIFYING GASES. Koppers Co., 800, Union Trust Building, Pittsburg, U.S.A. (Assignees of H. A. Gollmar, 800, Union Trust Building, Pittsburg, U.S.A.) International Convention date, March 7, 1927.

Sulphuretted hydrogen and other acid constituents are removed from fuel gases by washing with alkaline liquid containing an arsenic compound or metal of the tin group. After absorption of hydrogen sulphide, the solution is aerated to form a thioarsenate.

LATEST NOTIFICATIONS.

289,373. Lacquers. Carbide and Carbon Chemicals Corporation. April 25, 1927.

289,425. Apparatus for the distillation of solid or liquid matters. Dupuy, H. April 27, 1927.

289,383. Processes for the manufacture of fluorine compounds having a low silicon content. Verein Für Chemische und Metallurgische Produktion. April 25, 1927.

289,386. Process for producing photoprints and photo-copies. I.G. Farbenindustrie Akt.-Ges. April 25, 1927.

289,387. Process for converting nitrocelluloses which yield highly viscous solutions into nitrocelluloses which yield solutions of low viscosity. I.G. Farbenindustrie Akt.-Ges. April 25, 1927.

(*Continued on page* 441)

(*Continued from page 440*)

289,777. Process for the manufacture of crotyl bromide. I.G. Farbenindustrie Akt.-Ges. April 30, 1927.

289,794. Synthetic resins and the like. Nobel Industries, Ltd. April 28, 1927.

289,795. Manufacture of halogen derivatives of organic compounds. Polanyi, Dr. M., and Bogdandy, Dr. S. Von. April 29, 1927.

Specifications Accepted with Date of Application

265,938. Platinum contact bodies, Production of. T. von Artner February 15, 1926.

272,557. Catalytic oxidation of organic compounds in the gaseous or vapour state, Method of carrying out. I.G. Farbenindustrie Akt.-Ges. June 14, 1926.

273,247. Vat dyestuffs, Manufacture and production of. I.G. Farbenindustrie Akt.-Ges. June 22, 1926.

282,410. Metal catalysts, Manufacture of. I.G. Farbenindustrie Akt.-Ges. December 14, 1926. Addition to 281,218.

282,626. Sulphonated oils and fats with a high content of organically combined sulphuric acid, Production of. H. Flesch. December 23, 1926.

286,673. Electrolytic extraction of tin from alkaline lyes. Siemens and Halske Akt.-Ges. March 8, 1927.

287,076. Sulphuric esters of poly-oxyfatty acids, Production of. H. Flesch. March 14, 1927.

289,125-6. Inactive menthol, Production of. S. G. S. Dicker. (*Rheinische Kampfer Fabrik Ges.*). January 17, 1927.

289,135. Mordant disazo dyestuffs, Manufacture of. K. Carpmael and K. S. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*). January 18, 1927.

289,153. Lithopone and white oil paints therefrom, Manufacture of. K. Carpmael and K. S. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*). January 21, 1927.

289,154. Indigoid dyestuffs, Manufacture of. K. Carpmael and K. S. Carpmael (*I.G. Farbenindustrie Akt.-Ges.*). January 21, 1927.

289,170. Activation of carbon or carbonaceous material. K. Carpmael and K. S. Carpmael. (*I.G. Farbenindustrie Akt. Ges.*). January 24, 1927.

289,178. Ore concentrating machines. J. R. Broadley. January 28, 1927.

289,188. Dyestuffs, Manufacture of. British Dyestuffs Corporation, Ltd. J. Baddiley, P. Dootson, A. Shepherdson, and S. Thornley. February 8, 1927.

289,191. Vat dyes, Manufacture of. British Dyestuffs Corporation, Ltd., H. M. Bunbury, H. Evans and A. Shepherdson. February 9, 1927.

289,196. Salts of the alkaline earth metals from alkaline earth metal sulphides, Manufacture and production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). February 14, 1927.

289,220. Ores containing platinum, Treatment of. S. C. Smith. March 10, 1927.

289,241. Sulphur dyestuffs, Manufacture of. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*). March 29, 1927.

289,284. Fertilizers, Manufacture of. R. C. Fluck and A. Theil. July 1, 1927.

289,354. Purifying sodium sulphide. R. Botson and Soc. Industrielle des Applications Chimiques Soc. Anon. I.N.D.A.C. November 14, 1927.

289,370. Nitrate of lime, Production of. Appareils et Evaporateurs Kestner. May 6, 1927. Addition to 279,037.

261,720. Aqueous solutions of organic compounds insoluble or difficultly soluble in water. I.G. Farbenindustrie Akt.-Ges. November 19, 1925.

288,931. Petroleum products, Refining of. F. B. Thole, S. F. Birch, and W. S. G. P. Norris. October 13, 1926.

289,103. Vat dyestuffs. R. F. Thomson, J. Thomas, and Scottish Dyestuffs, Ltd. October 13, 1926.

266,289. Reducing metallic oxides, Method of. W. H. Smith. February 17, 1926.

289,105. Lead salts, Manufacture of. S. C. Smith. October 20, 1926.

289,111. Titanium compounds, Manufacture of. H. Wade. (*Titan Co. Aktieselskabet*). November 17, 1926.

289,116. Concentrating and evaporating liquids, Process for. Salt Union, Ltd., D. V. Plumbridge, and W. E. Gibbs. December 23, 1926.

Applications for Patents

American Cyanamid Co. and Marks, E. C. R. Solvents. 13,172. May 4.

Auer, L. Manufacture of emulsions from organic isocolloids. 13,231. May 4.

Auer, L. Coagulations, etc., of substances containing unsaturated carbon compounds. 13,232. May 4.

Bedford, C. S. Dyeing, etc., machines. 12,854. May 2.

Bogdandy, S. von, and Polanyi, M. Manufacture of halogen derivatives of organic compounds. 12,681. April 30. (Germany, April 29, 1927.)

British Dyestuffs Corporation, Ltd., and Payman, J. B. Production of wax-like polychloronaphthalenes. 12,813. May 1.

British Dyestuffs Corporation, Ltd., and Payman, J. B. Manufacture of wax-like mixtures. 12,814, 12,815. May 1.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of polyazo dyestuffs. 12,840. May 1.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of alkali cyanides. 12,918. May 2.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of compounds containing active oxygen. 12,919. May 2.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of resin-like products. 13,077. May 3.

Carpmael, A., and I.G. Farbenindustiie Akt.-Ges. Manufacture of hydrogen peroxide. 13,205. May 4.

Coley, H. E. Manufacture of zinc. 12,906. May 2.

Cordes Akt.-Ges., C., and Stuhlmann, P. Bleaching, etc., resins. 13,111. May 4. (Germany, May 4, 1927.)

Courtaulds, Ltd., and Whittaker, C. M. Dyeing artificial silk, etc. 13,314. May 5.

Deutsche Erdöl Akt.-Ges. Conversion of heavy into light hydrocarbon oils. 12,703, 12,704. April 30.

Ellis, G. H., and British Celanese, Ltd. Manufacture of aromatic compounds. 12,611. April 30.

Fischer, F. Purifying gases from sulphurated hydrogen. 12,670. April 30. (Germany, May 5, 1927.)

Harding Chemical Co., Ltd. Wetting-out agent for textile, etc., industries. 12,866. May 2.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Recovery of organic substances. 12,618. April 30.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Gas producers. 12,619. April 30.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Recovery of nitric acid. 12,620. April 30.

I.G. Farbenindustrie Akt..-Ges and Johnson, J. Y. Production of effects on fabrics. 12,621. April 30.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Manufacture of diolefines. 12,622. April 30.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Manufacture of polyazo dyestuffs. 12,840. May 1.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Manufacture of dyestuffs. 12,922. May 12.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Production of alkaline earth cyanides. 12,923. May 2.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Production of alkali earth metal cyanides. 12,924. May 2.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Impregnation process. 12,925. May 2.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Low-temperature carbonisation of bituminous material. 13,312. May 5.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Removing combustible residues from internal-combustion engines. 13,313. May 5.

I.G. Farbenindustrie Akt.-Ges. Mixers. 12,632. April 30. (Germany, December 10, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of esters. 13,038. May 3. (January 31, 1927.)

I.G. Farbenindustrie Akt.-Ges. Process for producing photoprints, etc. 13,191. May 4. (Germany, May 6, 1927.)

Jobson, C. H. (Standard Oil Co. of New York). Treatment of petroleum distillates. 12,600. April 30.

L. H. Process, Ltd. Extraction of hydrocarbons from bituminous materials. 12,843. May 1.

Loveluck, R. J., Scottish Dyes, Ltd., and Thomas, J. Production of indanthrone bodies. 12,661. April 30.

Nobel Industries, Ltd. Synthetic resins, etc. 12,663. April 30. (United States, April 28, 1927.)

Olpin, H. C. Manufacture of aromatic compounds. 12,611. April 30.

Oranionburger Chemische Fabrik Akt.-Ges. Production of halogen substituted organic sulpho-acids, etc. 13,080. May 3. (Germany, May 3, 1927.)

Oranionburger Chemische Fabrik Akt.-Ges. Emulsification, purification, etc. 13,243. May 4. (Germany, May 4, 1927.)

Oranionburger Chemische Fabrik Akt.-Ges. Process for protection of fibres, etc. 13,309. May 5. (Germany, May 6, 1927.)

Rosenheim, A. Removing dissolved silicic acids from liquids. 12,841. May 1. (Germany, June 4, 1927.)

Rosenheim, A. Removing silicic acid from liquids, etc. 13,221. May 4. (Germany, August 9, 1927.)

Scottish Dyes, Ltd., and Thomas, J. Amino derivatives. 12,662. April 30.

Sensicle, L. H. Process for recovery of ammonia from gas, etc. 12,721. May 1.

Wheeler, R. V. Heat treatment of carbonaceous materials. 12,946. May 2.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 6d. to 1s. 11d. per gall.; pyridinised industrial, 1s. 8d. to 2s. 1d. per gall.; mineralised, 2s. 7d. to 2s. 11d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6¾d. per lb. Crude 60's, 2s. 3d. to 2s. 4d. per gall. prompt.

ACID CRESYLIC 99/100.—2s. 8d. to 3s. per gall. 97/99.—2s. 7d. to 2s. 8d. per gall. Pale, 95%, 2s. 5d. to 2s. 6d. per gall. Dark, 95%, 2s. 2d. to 2s. 3d.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7¾d. to 8d. per gall.

BENZOLE.—Prices at works; Crude, 10½d. to 11d. per gall.; Standard Motor, 1s. 4½d. to 1s. 5d. per gall.; 90%, 1s. 5½d. to 1s. 6d per gall.; Pure, 1s. 9d. to 1s. 10d. per gall.

TOLUOLE.—90%, 1s. 4d. to 2s. per gall. Firm. Pure, 1s. 6d. to 2s. 3d. per gall.

XYLOL.—1s. 3d. to 1s. 11d. per gall. Pure, 2s. 4d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 7½d. to 8¼d. per gall. Heavy, 8¼d. to 8¾d. per gall. Standard specification, 7¾d. to 7½d. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 7½d. to 7¾d. per gall. Solvent 90/160, 10d. to 10½d. per gall. Solvent 95/160, 10½d. to 1s. 8d. per gall. Solvent 90/190, 9½d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed, £8 per ton. Hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £13 to £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 65s. to 67s. 6d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 5s. to 6s. per gall. 90/180, 3s. to 4s. 6d. per gall. Heavy, 2s. 6d. to 3s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. per lb.

DICHLORANILINE.—2s. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—2s. 1½d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers

ACID, ACETYL SALICYLIC.—2s. 5d. to 2s. 7d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 10½d. to 2s. per lb. Less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P. PULV.—1s. 2½d. to 1s. 3½d. per lb. Technical.—10½d. to 11½d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4½d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—8s. to 8s. 3d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

ATROPINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—11s. 4d. to 11s. 7d. per lb.

BISMUTH CITRATE.—10s. 4d. to 10s. 7d. per lb.

BISMUTH SALICYLATE.—10s. 7d. to 10s. 10d. per lb.

BISMUTH SUBNITRATE.—9s. 7d. to 9s. 10d. per lb.

BISMUTH NITRATE.—6s. 7d. to 6s. 10d. per lb.

BISMUTH OXIDE.—14s. 7d. to 14s. 10d. per lb.

BISMUTH SUBCHLORIDE.—14s. 4d. to 14s. 7d. per lb.

BISMUTH SUBGALLATE.—8s. 7d. to 8s. 10d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 1½d. per lb.; 12 W. Qts. 1s. 0½d. per lb.; 36 W. Qts., 1s. per lb.

BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Ammonium, 2s. 1d. to 2s. 3d. per lb.; potassium, 1s. 9½d. to 1s. 11½d. per lb.; sodium, 2s. to 2s. 2d. per lb.; granulated ½d. per lb. less; all spot. Large quantities at lower rates.

CALCIUM LACTATE.—1s. 2d. to 1s. 3½d. per lb.

CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. ·730—11½d. to 1s. 0½d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE.—B.P., 2s. 6d. to 2s. 9d. per lb. Green, 2s. 9d. to 3s. 2d. per lb.; U.S.P., 2s. 7d. to 2s. 10d. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8½d. to 9½d. per oz.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

MENTHOL.—A.B.R. recrystallised B.P., 16s. per lb. net for January delivery; Synthetic, 9s. to 10s. per lb.; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10s. to 5s. 11d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 5d. to 1s. 9d. per lb.

METHYL SULPHONAL.—9s. to 9s. 3d. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 1d. to 1s. 4d. per lb.

PHENACETIN.—2s. 6d. to 2s. 9d. per lb.

PHENAZONE.—4s. to 4s. 3d. per lb.

PHENOLPHTHALEIN.—6s to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—102s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 4d. to 2s. 7d. per lb.; U.S.P., 2s. 3d. to 2s. 6d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—55s. per lb.; in quantity lower.

SALOL.—2s. 4d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—2s. 1d. to 2s. 4d. per lb., B.P.C., 1923—2s. 6d. to 2s. 7d. per lb. U.S.P., 2s. 4d. to 2s. 7d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 6½d. to 1s. 9d. per lb. Crystal, 1s. 7d. to 1s. 10d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—6s. 9d. to 7s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.

THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—10s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 3d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.

COUMARIN.—9s. 9d. per lb.

CITRONELLOL.—13s. 6d. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—6s. per lb.

ETHYL PHTHALATE.—2s. 6d. per lb.

EUGENOL.—8s. 3d. per lb.

GERANIOL (PALMAROSA).—20s. per lb.

GERANIOL.—6s. to 10s. per lb.

HELIOTROPINE.—4s. 9d. per lb.

ISO EUGENOL.—13s. per lb.

LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.

LINALYL ACETATE.—Ex Shui Oil, 14s. 6d. per lb. Ex Bois de Rose, 18s. 6d. per lb.

METHYL ANTHRANILATE.—8s. 6d. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—35s. per lb.

MUSK XYLOL.—7s. per lb.

NEROLIN.—3s. 6d. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.

RHODINOL.—35s. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.

ANISE OIL.—2s. 9d. per lb.

BERGAMOT OIL.—26s. per lb.

BOURBON GERANIUM OIL.—16s. per lb.

CAMPHOR OIL.—9d. per lb.

CANANGA OIL, JAVA.—12s. 9d. per lb.

CINNAMON OIL LEAF.—6s. 9d. per oz.

CASSIA OIL, 80/85%.—8s. per lb.

CITRONELLA OIL.—Java, 2s. per lb., c.i.f. U.K. port. Ceylon, pure, 1s. 9d. per lb.

CLOVE OIL.—5s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN.—2s. 1d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 16s. per lb.

LEMON OIL.—11s. 6d. per lb.

LEMONGRASS OIL.—4s. 3d. per lb.

ORANGE OIL, SWEET.—20s. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 62s. 6d. per oz.

PALMA ROSA OIL.—12s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 15s. 9d. per lb.; Japanese, 7s. 3d. per lb.

PETITGRAIN.—7s. 3d. per lb. Sandalwood, Mysore, 26s. 6d. per lb., 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, May 10, 1928.

DEMAND for various chemicals remains very satisfactory, and prices also remain firm. Export business is maintained with good inquiry for forward contracts.

General Chemicals

ACETONE.—Unchanged and firm at £65 to £67 per ton.

ACID ACETIC remains steady at £37 to £38 per ton for 80 per cent. and in good demand.

ACID FORMIC.—Price unchanged at £47 per ton for 85%, and improved demand continued.

ACID LACTIC.—Unchanged.

ACID OXALIC is in good demand at £31 to £32 per ton.

ACID TARTARIC continues firm at 1s. 4½d. to 1s. 5d. per lb., with increasing demand.

AMMONIUM CHLORIDE.—Unchanged.

ALUMINA SULPHATE remains firm at £6 5s. to £6 7s. 6d. per ton for 17/18%.

ARSENIC.—Demand has been a little more active.

BARIUM CHLORIDE.—Unchanged at £8 to £8 5s. per ton.

COPPER SULPHATE.—Unchanged.

CREAM OF TARTAR.—The position still remains very firm and price unchanged at £104 per ton, less 2½% for 99–100% B.P. quality.

FORMALDEHYDE.—The improved demand continues, and price remains steady at £39 per ton for 40%, in casks.

LEAD ACETATE is unchanged at £41 to £42 per ton for white, with £1 per ton less for brown.

LEAD NITRATE.—Unchanged.

LIME ACETATE is still in short supply.

METHYL ACETONE.—The position is firm, price at present unchanged at £56 to £58 per ton for 45%.

POTASSIUM CARBONATE AND CAUSTIC.—Unchanged.

POTASSIUM CHLORATE.—Price unchanged at 3d. to 3¼d. per lb. Position firm.

POTASSIUM PERMANGANATE.—Position remains firm. Price is likely to advance, at present unchanged at 5¼d. per lb. for B.P. Commercial, ¼d. per lb. less.

POTASSIUM PRUSSIATE is still in fair demand at £59 to £63 per ton.

SODA ACETATE.—Supplies are still short and position very firm at £22 per ton.

SODA BICHROMATE.—Unchanged at British makers' figures.

SODA CHLORATE.—Unchanged at £28 to £30 per ton.

SODA HYPOSULPHITE.—Unchanged.

SODA NITRITE.—Position very firm and price advancing at £20 10s. to £21 10s. per ton.

SODA PHOSPHATE.—Unchanged.

SODA PRUSSIATE is very firm at 4¾d. to 5¼d. per lb. according to quantity.

SODA SULPHIDE.—Unchanged.

TARTAR EMETIC is very firm and in good demand at 11¼d. to 11¾d. per lb.

ZINC SULPHATE is unchanged.

Coal Tar Products

THE market in benzols, solvent and heavy naphthas is beginning to stabilise itself, and the below-mentioned prices have been quoted during the past week.

MOTOR BENZOL.—1s. 4½d. to 1s. 5½d. per gallon, on rails.

SOLVENT NAPHTHA.—1s. 1d. to 1s. 2d. per gallon, on rails at works.

HEAVY NAPHTHA.—1s. 1d. to 1s. 2d. per gallon, on rails at works.

CREOSOTE OIL is weaker, although supplies are not very plentiful to the end of June: For the forward position, the price in the North is 6½d. per gallon, on rails, while in London the price is 7d. per gallon.

CRESYLIC ACID is still on the decline, and the 98/100 % quality has been quoted as low as 2s. 6d. per gallon, f.o.b., naked, while the dark quality, 95/97%, still remains at about 1s. 10d. to 1s. 11d. per gallon.

NAPHTHALENES.—The 74/76 quality is quoted at £6 10s. per ton, and the 76/78 quality at £7 10s. to £8 per ton.

PITCH is unchanged at 60s. to 65s. per ton, f.o.b. U.K. port.

Latest Oil Prices

LONDON, May 9.—LINSEED OIL firm and 5s. to 7s. 6d. per ton higher. Spot, ex mill, £31 5s.; May, £30 12s. 6d.; June, £30 15s.; June-August, £30 17s. 6d.; and September-December, £31 15s. COTTON OIL quiet. Egyptian crude, £35; refined common edible, £40; and deodorised, £42, naked. RAPE OIL slow. Crude extracted, £41 10s.; and technical refined, £43 10s., naked, ex wharf. TURPENTINE inactive and 3d. per cwt. lower. American spot, 40s. 9d.; June, 41s. 3d.; and July-December, 42s. per cwt.

HULL, May 9.—LINSEED OIL.—Spot, £29 17s. 6d.; May, £30; May-August, £30 7s. 6d.; September-December, £31 5s. per ton, naked. COTTON OIL.—Bombay crude, £31 10s.; Egyptian crude, £33 10s.; edible refined, £37 10s.; technical, £36; deodorised, £39 10s. per ton, naked. PALM KERNEL OIL.—Crushed, 5½ per cent., £38 10s. per ton, naked. GROUNDNUT OIL.—Crushed/extracted, £39; deodorised, £43 per ton. SOYA OIL.—Extracted and crushed, £33; deodorised, £36 10s. per ton. RAPE OIL.—Crude/extracted, £40 15s.; refined, £42 15s. per ton, net cash terms, ex mill. TURPENTINE.—Spot, 44s. per cwt. CASTOR OIL and COD OIL unaltered.

Nitrogen Products

Export.—On account of the heavy deliveries for immediate consumption, the past week seems to have shown considerable diminution in stocks available, but as the consuming season is nearing its end, this has had no effect on the price, which remains at £10 2s. 6d. per ton f.o.b. U.K. port in single bags. A decline of 10 cents per 100 lb. has been reported in the United States. Inquiry has commenced for forward positions, but producers seem unwilling to commit themselves to a price.

Home.—The season in the United Kingdom is a late one and merchants in several parts of the country are still purchasing. There have been some inquiries for the June price, which has not yet been announced. We anticipate, however, that the present price will remain in operation for that month's delivery.

Nitrate of Soda.—There is little change in the nitrate of soda position. A few holders of stocks are getting anxious, and a low price for an isolated quantity is occasionally heard of.

South Wales By-Products

THERE is very little change to report in South Wales by-product activities. The demand for pitch is small and confined mostly to patent fuel manufacturers. The price is unaltered round about 65s. per ton f.o.r. Benzole and heavy and solvent naphtha reflect the advance in the price of petrol by an increase of 4d. per gallon. Crude tar is easy round about 50s. per ton f.o.r., while crude naphthalene is almost stagnant at 80s. per ton f.o.r. Refined tars have a steady but moderate call, coke oven tar changing hands at from 7¾d. to 8¼d. per gallon delivered in barrels, and gasworks tar at 7½d. to 7¾d. per gallon. Patent fuel and coke exports are on the quiet side. Export prices of patent fuel are 21s. to 22s. 6d. from Cardiff, and from 20s. 3d. to 20s. 9d. from Swansea. Coke, best foundry, continues to sell at from 32s. 6d. to 37s. per ton, and other sorts from 25s. to 32s. 6d. per ton. Oil imports over the last four weeks totalled over 30,000,000 gallons.

Increase in the Price of Citrates

MAY AND BAKER, LTD., announce an increase of one penny per lb. in the prices of citrates.

Separation of Potassium Isotopes

IT has been known, since the investigations of F. W. Aston, that ordinary potassium consists of a mixture of two isotopes K_{39} (95 per cent.) and K_{41} (5 per cent.). G. von Hevesy and Marie Lögstrup, in the number of the *Zeitschrift für anorganische Chemie* just to hand (Vol. 171, Parts 1-2) announce that they have succeeded in a partial separation of the isotopes by the method of ideal distillation. The residue was richer in the heavier isotope than normal potassium. A comparison of this residue with ordinary potassium indicated that its radioactivity had increased, whence it is to be inferred that the feeble radioactivity of ordinary potassium is to be attributed to the isotope of atomic weight 41.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, May 9, 1928.

THE heavy chemical market has during the past week continued to show a fair amount of activity, but export inquiry has not been quite so good. Prices remain practically unchanged.

Industrial Chemicals

ACETONE, B.G.S.—£64 to £67 per ton, ex store, according to quantity.

ACID ACETIC.—98/100% glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports. 80% pure, £37 10s. per ton, ex wharf. 80% technical £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powdered £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In good demand, and offered at 6¾d. per lb. delivered.

ACID CITRIC, B.P.—Quoted 1s. 11¾d. per lb., less 5%, ex store, spot delivery. Rather cheaper to come forward.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC.—80° quality £24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the continent at 3¾d. per lb., ex wharf. Spot material quoted 3¾d. per lb., ex store. In better demand.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality, £5 15s. per ton for 168° quality. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 4½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Quoted £5 10s. per ton, c.i.f. U.K. ports, prompt shipment. Spot material available at about £5 15s. per ton, ex store.

ALUM, LUMP POTASH.—Spot material available at about £9 per ton, ex store. Crystal meal quoted £8 10s. per ton, ex store. Lump quality on offer from the Continent at £8 5s. per ton, c.i.f. U.K. ports.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump £37 per ton. Powdered £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Continental about £19 per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture quoted £16 15s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £19 2s. 6d. per ton, ex wharf, prompt despatch from mines. Spot material on offer at £20 2s. 6d. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 15s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers £6 12s. 6d. per ton, delivered, minimum 4-ton lots. Continental on offer at £6 10s. per ton, ex wharf.

CALCIUM CHLORIDE.—British manufacturers' price £4 5s. to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton. f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental price unchanged at about £25 per ton, c.i.f. U.K. ports. Some British material available at about £25 per ton, ex store.

FORMALDEHYDE, 40%.—Offered at £35 10s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton. c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £31 per ton, ex store.

LEAD, WHITE.—Quoted £31 10s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports. Brown, £38 10s. per ton, c.i.f. U.K. port. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

METHYLATED SPIRIT.—Industrial quality, 64° O.P., quoted 1s. 7d. per gallon, less 2%, delivered.

PTOASSIUM BICHROMATE.—4½d. per lb. delivered, minimum 4-ton lots. Under 4-ton lots, ½d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 10s. per ton, ex wharf, prompt shipment from the Continent. Spot material available at £26 10s. per ton, ex store.

POTASSIUM CHLORATE.—99¾/100% powder quoted £23 10s. per ton, c.i.f. U.K. ports. Crystals, 30s. per ton extra. B.P. quality, crystals or powder offered at £32 per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6⅜d. per lb.

SODA CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton, and 70/72%, £13 12s. 6d. per ton, minimum 4-ton lots, carriage paid on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—In good demand and spot material scarce. Now quoted £21 5s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less. No change in price for next year.

SODIUM BICHROMATE.—Quoted 3d. per lb., delivered buyer's works, minimum 4-ton lots. Under 4 and over 2-ton lots, 3 1/16d. per lb. Under 2-ton lots, 3¼d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 3s. 9d. per ton, ex quay, minimum 4-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots.

SODIUM NITRATE.—Quoted £11 per ton, ex store.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at 4½d. per lb., ex store. Offered for prompt shipment from the Continent at 4¼d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, for unground quality, 52s. 6d. per ton delivered. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices now as follows:—Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £9 2s. 6d. per ton; delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material, 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s.; rock, £10 12s. 6d.; floristella, £9 10s.; ground American, £9 5s.; ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports. 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf, prompt shipment from the Continent.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Death of Mr. William Windus

THE death occurred recently in Bristol of Mr. William Windus. The first 10 years of his working life were spent at Widnes, where he knew Mr. Brunner and Dr. Mond. Fifty years ago, in 1878, he came to fill a responsible position at the Netham Chemical Works, Bristol, which was later merged in the United Alkali Co., Ltd. For a long period he was manager, later becoming a director. Since 1917 he had been a director of the Bristol Gas Co. In March, 1923, when he was the chief guest at the annual dinner of the Bristol Section of the Society of Chemical Industry, he made some interesting remarks about the war-time poison gas plant at Avonmouth. At that plant, he said, they turned out 400 tons of poison gas, and they had a casualty for every ton made. The plant was so forced there, that towards the end the chemists had to look at the gauges through binoculars, owing to the escapes.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, May 10, 1928.

Slightly expanding interest in certain sections of the heavy chemical market here during the past week has been reflected in a certain amount of increased inquiry from home users, and in some instances buyers seem to be inclined to venture a little bit further ahead than has been their wont. On overseas account the volume of business at this centre is on much the same quiet level as before. A feature of the market is the general steadiness of prices, these being maintained pretty well all round.

Heavy Chemicals

A moderate trade is being put through in the case of chlorate of soda, and quotations for this material are held at up to about 3d. per lb. Nitrite of soda is very firm, and from £19 10s. up to £19 15s. is now being asked, supplies not being excessive. Caustic soda attracts a fair amount of interest, and the demand keeps up, particularly against contracts, offers being firm at from £13 7s. 6d. to £15 7s. 6d. per ton, according to quality. Hyposulphite of soda is fairly steady and attracts a certain amount of attention, with commercial quality selling at up to £9 10s. per ton and photographic at between £16 and £16 10s. Prussiate of soda is in moderate request, and prices are very firm at from 4½d. to 5d. per lb., according to quantity. Bleaching powder continues to be offered on a contract basis of £7 per ton, and fair sales of this material are being made. Phosphate of soda is on the quiet side, with current offers ranging from £12 5s. to £12 10s. per ton. A good trade is being put through in the case of bicarbonate of soda, and prices are maintained at £10 per ton. Saltcake is steady and in quiet demand at up to £2 15s. per ton. There is not a great deal of business offering in sulphide of sodium, but values are about maintained at from £9 10s. to £10 per ton for the 60–65 per cent. concentrated solid quality and about £8 for the commercial product. Bichromate of soda is steady and in moderate request at from 3d. to 3¼d. per lb. With regard to alkali, this, as before, meets with a steady sale at £6 2s. 6d. per ton in contract lots.

In the potash group, carbonate is somewhat easier at round £25 per ton, with business on quiet lines. Yellow prussiate of potash is fairly active and prices are firm at 6¾d. to 7¼d. per lb. Bichromate of potash is maintained at about 4¼d. per lb., and inquiry for this material continues at its recent level. Chlorate of potash is in quietly steady demand, with current offers in the neighbourhood of 3d. per lb. There is not a great deal of business offering in the case of permanganate of potash, but values are maintained at 5d. to 5¼d. per lb. for the B.P. and about 4¾d. per lb. for the commercial grade. Caustic potash keeps firm and fairly active at £33 5s. per ton for prompt delivery of one to five-ton lots.

Only a moderate demand for arsenic has been reported during the past week, offers of this material ranging from about £17 5s. to £17 10s. per ton at the mines, for white powdered, Cornish makes. A steady trade is being done in sulphate of copper, and prices are firm at up to £27 per ton, f.o.b. Nitrate of lead is quiet but fairly steady at about £37 per ton, with white acetate quoted at £40, and brown material at £39 per ton. There has been little change since last report in the position of acetate of lime, and grey quality has been on offer at about £15 15s. per ton, and brown at £9 10s.

Acids and Tar Products

With offers of citric acid rather more plentiful, quotations have eased off a little, round 1s. 11d. per lb. being asked during the past few days. Tartaric acid, however, is fairly steady at between 1s. 4d. and 1s. 4¼d. per lb., although there is not a great deal of buying going on in this section. Acetic acid is quite steady, and continues in moderately good demand, with 80 per cent. commercial at about £37 10s. per ton, and glacial at £66. Oxalic acid sells in moderate quantities at round 3¼d. per lb.

Pitch is nominally unchanged on the week at about £3 per ton, but there is not much business passing in this. Solvent naphtha is in fair demand, and offers are now at about 1s. 2¼d. per gallon. Cresote oil is rather slow and slightly easier at about 7¼d. per gallon. Crude carbolic acid is steady at from 2s. 5d. to 2s. 5½d. per gallon, with crude on offer at up to 6½d. per lb.

Company News

National Match Factory of Venezuela.—An interim dividend of 3 per cent., free of income tax, is announced.

Bryant and May (Brazil).—The profits for the year March 31, 1928, amount to £49,236, from which is deducted a provision for income-tax of £13,288, leaving £35,948. Adding the balance brought forward of £7,463, there is £43,411 available. The directors recommend writing off from preliminary expenses £3,000 and payment of a dividend of 3 per cent., free of income tax, on the ordinary shares, carrying forward £8,411.

Crosfields Oil and Cake Co.—The report for the twelve months ended March 31, 1928, states that the net profits (after providing for all charges, 10 per cent. depreciation of plant, directors' fees and income tax) amount to £27,393; to this is added accumulated credit balance on the profit and loss account brought forward of £2,075, giving a total of £29,468. The directors recommend a dividend of 15 per cent. per annum, less tax, placing to general reserve fund £12,000, to staff reserve fund £1,000, and carrying forward £4,468. The annual meeting will be held at Liverpool on May 16, at 2.30 p.m.

Nitrate Railways Co.—The gross receipts for the past year amounted to £698,539, and the net receipts to £233,917. Adding the balance brought forward, interest, discount, etc., exchange and transfer fees, the available total is £322,650. Balance of income tax, French taxes, etc., and expenditure on new sidings and buildings amounted together to £23,296; £50,000 has been placed to renewals and new works account and £30,000 to amortisation account. A final dividend of 3½ per cent. is proposed on the ordinary shares, making a total dividend for the year of 5 per cent., leaving a balance of £74,454 to be carried forward.

Salar del Carmen Nitrate Co.—For the year ended December 31 last, the report states that the loss on trading, less transfer fees, amounts to £3,302, and after adding stoppage expenses £8,339, re-opening expenses £8,417, Chilean taxes £1,215, amortisation of grounds and depreciation of plant and machinery £3,097, London office charges £3,812, interest and discount £791, and interest on 6½ per cent. Notes £9,750, the result is a loss for the year of £38,724, which, added to the balance brought forward of £21,126, makes a debit on profit and loss account of £59,850. In view of the improved prospects of industry, it was decided to re-open oficina on November 18 last, and forward contracts have been made for a fair proportion of syndicate's expected production at prices which it is anticipated will show a moderate profit for current year. The annual meeting will be held at Winchester House, London, on May 17, at 12 noon.

British Match Corporation.—In their report for the financial period from August 15, 1927, the date of incorporation, to April 30, 1928, the directors state that the net revenue amounted to £307,425. There has also been received a special bonus on the ordinary shares of Bryant and May, Ltd., of £100,000, from which the directors have applied towards the liquidation of preliminary expenses the sum of £81,071, leaving to be added to revenue account £18,929, making £326,354. The directors recommend payment of a final dividend of 4 per cent., less income tax at 3s. 9½d. in the £, making 6 per cent. for the period, and carrying forward £35,855. While the accounts submitted, states the report, cover a period of only 8½ months, the net revenue represents the dividends received from Bryant and May, Ltd., for 12 months' trading and from J. John Masters and Co., Ltd., for 15 months, to March 31, 1928, in both cases. The preliminary expenses amounted to £115,815. These have been written off by a contribution from the Swedish Match Co. of £34,744, and by an amount of £81,070 out of the special bonus declared for this purpose by Bryant and May. The ordinary shareholders of Bryant and May have all accepted the offer made to them in July last, and have exchanged their shares for shares in this company, as recommended by the directors of that company.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

LEEDS CHEMICAL CLEANING WORKS, LTD., Waterloo Mills, Bramley, Leeds, dyers. (C.C., 12/5/28.) £16 8s. 4d. March 30.

Deed of Arrangement

DAWSON, Edgar, 70, Foleshill Road, Coventry, and Weston Underwood, aluminium refiner. (D.A., 12/5/28.) Dated May 2, filed May 7. Trustee, H. G. W. Teverson, Lloyds Bank Chambers, Coventry, C.A. Secured creditors, £1,432; liabilities unsecured, £9,516; assets, less secured claims, £1,836.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

DOVEY VALLEY SILICA SYNDICATE, LTD., London, E.C. (M., 12/5/28.) Registered April 24, £250 debentures, part of £5,000; general charge. *£3,250. December 31, 1927.

MEDICAL SUPPLY ASSOCIATION, LTD., London, W.C. (M., 12/5/28.) Registered April 25, £4,000 (not ex.) debenture, to Bank; general charge. *Nil. November 22, 1927.

RAYON MANUFACTURING CO. (1927), LTD., Leatherhead. (M., 12/5/28.) Registered April 14, £25,000 (not ex.) indemnity to Sir S. M. Skinner, 22, Corfton Road, W., only to be enforceable when company's liability to the Bank should exceed £50,000; general charge; also registered April 27, series of £45,000 (not ex.) debentures, present issue £41,000; general charge.

VANORE, LTD., London, N., medicine manufacturers. (M., 12/5/28.) Registered April 25, £700 debentures, to Mrs. A. Fisher, 4, Muswell Hill Road, Highgate; general charge. *Nil. December 31, 1927.

Satisfaction

CHARLES (EDWARD) AND CO., LTD., Nottingham, bleachers, etc. (M.S., 12/5/28.) Satisfaction registered April 28, £5,300 outstanding July 1, 1908.

Receivership

BRITISH BOILER FLUID AND ENGINEERS' STORES CO., LTD. (R., 12/5/28.) R. W. O'Donoghue, of 44, Decima Street, Bermondsey, was appointed receiver and manager on April 11, 1928, under powers contained in debenture dated November 14, 1905.

London Gazette, &c.

Partnership Dissolved

WHITTAKER AND GREENWOOD (George Thomas WHITTAKER, Samuel GREENWOOD and George WHITTAKER), paint and varnish manufacturers, Mornington Road, Bingley, Yorks, by mutual consent as from March 31 1928. Debts received and paid by G. T. Whittaker and G. Whittaker, who will continue the business under the style of Whittaker and Son.

Company Winding Up Voluntarily

LANGWITH BYE-PRODUCT CO., LTD. (C.W.U.V., 12/5/28.) T. E. Haslam, Sheepbridge Works, Chesterfield, appointed as liquidator, April 25.

New Companies Registered

SIKA-FRANCOIS, LTD., Salisbury House, London, E.C.2. Registered May 4. Nom. capital, £15,150 in 15,000 7 per cent. cumulative preference shares of £1 each and 3,000 ordinary shares of 1s. each. To adopt an agreement with G. H. Smith, Miners and Partners, Ltd., J. C. Miners and the Francois Cementation Company, Ltd., to carry on processes to stop the incursion or percolation of water; to prevent damage by damp, to impart increased or complete imperviousness to and add to the adhering and setting qualities of cement, mortar, concrete, wood, fibre, oil, petrol, and other substances by various methods, including waterproofing; to deal in and dispose of compounds and substances for waterproofing, in particular materials, whether in paste or solution, known as "Sika." The first directors are H. Clayton, A. R. Neelands, A. R. Pittard, and A. B. Geen (nominated by Sika, Ltd.), G. H. Smith and J. C. Miners.

W. B. PILKINGTON, LTD, 9, Hanbury Road, Acton Town, London, W.3. Registered May 7. Nom. capital, £2,000 in £1 shares (1,000 7 per cent. non-cumulative preference and 1,000 ordinary). Dyers, printers of silk, cotton or other fabrics, block printers, art workers, silk and general merchants, chemical manufacturers and drysalters, etc. Directors: W. B. Pilkington, J. L. Wade.

ROYKA, LTD. Registered May 8. Nom. capital, £3,000 in £1 shares. Objects: To acquire the benefit of the trade mark "Royka," enter into an agreement with A. B. Schofield, and to carry on the business of soap boilers, manufacturers of and dealers in soap of all kinds and all articles and substances used for the purposes of manufacturing soap, etc. Directors: A. B. Schofield, 24, Knowsley Street, Bury; L. Knott.

MORUM YATES AND EDWARDS, LTD., 30-31, Holborn, London, E.C.1. Registered April 30. Nom. capital, £5,000 in £1 shares. To adopt an agreement with W. E. Morum, J. Yates and J. C. Edwards, and to carry on the business of chemical manufacturers formerly carried on by them at 30/31, Holborn, London, E.C. Directors: W. E. Morum, Abbey Lodge, Chislehurst, Kent, ond J. C. Edwards.

Balances and Scales

FOR some years, the firm of W. A. Webb, Ltd., scale, weight and weighing machine manufacturers, have been manufacturing balances of a high degree of accuracy. The design and construction make them, state the makers, capable of standing

the tests claimed by foreign manufacturers. Moreover, the firm, not being bound by any definite design or method of construction, are able to eliminate many of the points that are often drawbacks. A wide range of instruments is made, the illustration being of a type capable of carrying a load up to 10 kg., and sensitive to 5 mg. ■